

**STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION**

**2800 BERLIN TURNPIKE, P.O. BOX 317546
NEWINGTON, CONNECTICUT 06131-7546**



Phone: 860-594-3128

October 27, 2016

Subject: Project No. 100-178

Replacement of Bridge No. 03120, Bassett Road over I-91 in the Town of North Haven.

NOTICE TO CONTRACTORS:

This is to notify all concerned and especially the prospective bidders that the bid opening for the subject project has been postponed previously to November 2, 2016 at 2:00 P.M. in the Conference Room of the Department of Transportation Administration Building, 2800 Berlin Turnpike, Newington, Connecticut.

Addendum No. 1 is attached

The Department has established a general mailbox to receive contractor questions. Please send all future questions to DOTContracts@ct.gov

Philip J. Melchionne

For: Gregory D. Straka
Contracts Manager
Division of Contracts Administration

10/26/2016
REPLACEMENT OF BRIDGE NO. 03120
BASSETT ROAD OVER I-91
FEDERAL AID PROJECT NO. 6100(007)
STATE PROJECT NO. 100-178
NORTH HAVEN

ADDENDUM NO. 1

This Addendum addresses the following questions and answers contained on the “CT DOT QUESTIONS AND ANSWERS WEBSITE FOR ADVERTISED CONSTRUCTION PROJECTS”:

Question and Answer No. 1, 9, 11, 12, 14, 15, 18, and 20

SPECIAL PROVISIONS
NEW SPECIAL PROVISION

The following Special Provision is hereby added to the Contract:

ITEM NO. 0101125A – PORTABLE TURBIDITY METER

REVISED SPECIAL PROVISION

The following Special Provisions are hereby deleted in their entirety and replaced with the attached like-named Special Provisions:

**ITEM NO. 0514271A – PRECAST CONCRETE/STEEL COMPOSITE
SUPERSTRUCTURE**

ITEM NO. 0601107A – HIGH EARLY STRENGTH CONCRETE

**ITEM NO. 0707009A – MEMBRANE WATERPROOFING (COLD LIQUID
ELASTOMERIC)**

NEW CONTRACT ITEM

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>UNIT</u>	<u>QUANTITY</u>
<u>0714050</u>	<u>TEMPORARY EARTH RETAINING SYSTEM</u>	<u>S.F.</u>	<u>1720</u>
<u>0214100</u>	<u>COMPACTED GRANULAR FILL</u>	<u>C.Y.</u>	<u>260</u>
<u>0101125A</u>	<u>PORTABLE TURBIDITY METER</u>	<u>EA.</u>	<u>1</u>

REVISED CONTRACT ITEMS

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>ORIGINAL QUANTITY</u>	<u>REVISED QUANTITY</u>
<u>0202529</u>	<u>CUT BITUMINOUS CONCRETE PAVEMENT</u>	<u>145</u>	<u>360</u>
<u>0203000</u>	<u>STRUCTURE EXCAVATION – EARTH (COMPLETE)</u>	<u>6743</u>	<u>7003</u>
<u>0212000</u>	<u>SUBBASE</u>	<u>570</u>	<u>610</u>
<u>0406170</u>	<u>HMA S1</u>	<u>375</u>	<u>400</u>
<u>0406171</u>	<u>HMA S0.5</u>	<u>724</u>	<u>749</u>
<u>0514271A</u>	<u>PRECAST CONCRETE/ STEEL COMPOSITE SUPERSTRUCTURE</u>	<u>9164</u>	<u>11232</u>
<u>0601107A</u>	<u>HIGH EARLY STRENGTH CONCRETE</u>	<u>146</u>	<u>11</u>
<u>0602006</u>	<u>DEFORMED STEEL BARS – EXPOXY COATED</u>	<u>31380</u>	<u>14940</u>
<u>0713040A</u>	<u>PERMANENT STEEL SHEET PILING</u>	<u>2615</u>	<u>4800</u>
<u>0822001A</u>	<u>TEMPORARY PRECAST CONCRETE BARRIER CURB</u>	<u>2780</u>	<u>3060</u>
<u>1205207</u>	<u>TYPE DE-7 DELINEATOR</u>	<u>30</u>	<u>44</u>
<u>1220027</u>	<u>CONSTRUCTION SIGNS</u>	<u>1451</u>	<u>1515</u>

PLANS**NEW PLAN**

The following Plan Sheet is hereby added to the Contract:

03.35-1.A1

REVISED PLANS

The following Plan Sheets are hereby deleted and replaced with the like-numbered Plan Sheets:

02.01.A1, 03.02.A1, 03.04.A1, 03.16.A1, 03.17.A1, 03.18.A1, 03.32.A1, 03.34.A1, 03.35.A1, 03.36.A1, 03.40.A1, 03.41.A1, 05.02.A1, 06.02.A1, 06.03.A1

PERMIT APPLICATIONS

The following Permit Application is hereby added to the Contract:

- **STORM WATER DISCHARGE PERMIT - APPLICATION**

The Detailed Estimate Sheet does not reflect these changes.

The Bid Proposal Form has been revised to reflect these changes.

There will be no change in the number of calendar days due to this Addendum.

The foregoing is hereby made a part of the contract.

ITEM #0101125A – PORTABLE TURBIDITY METER

Description:

Under this item, the Contractor shall be responsible for furnishing a Portable Turbidity Meter for measuring the turbidity of storm water for compliance with the State of Connecticut Department of Energy and Environmental Protection's General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities. The EPA compliant device shall be a portable meter having a 0-1000 NTU (Nephelometric Turbidity Units) range and a high accuracy at low ranges (<0.05 NTU). The meter selected shall be submitted to the Engineer for approval.

Materials:

The turbidity meter shall conform to the EPA Method 180.1 standards for testing. The portable turbidity meter shall be comparable to the Hanna Portable Turbidity Meter, HI 98703, with Fast Tracker Technology which includes five (5) sample cuvettes and caps, calibration cuvettes, silicone oil, cuvette cleaning cloth, batteries, AC adapter, instruction manual, and a rugged carrying case. The meter shall have a Tag Identification System, to verify that samples have been taken at pre-established locations during inspections and for recording multiple location sites.

Construction Methods:

The Contractor shall provide the Turbidity Meter for the Department's use of monitoring turbidity of stormwater effluent for compliance of the National Pollution Discharge Elimination System.

Method of Measurement:

This item will be measured for payment by the number of Portable Turbidity Meters of the type accepted and utilized.

Basis of Payment:

This item will be paid for at the Contract Unit Price each for "Portable Turbidity Meter", complete and in place, which price shall include all materials, tools, equipment, and labor incidental thereto.

Pay Item
Portable Turbidity Meter

Pay Unit
EA.

ITEM #0514271A – PRECAST CONCRETE/STEEL COMPOSITE SUPERSTRUCTURE

Description: Work under this item shall be in accordance with the applicable provisions of Sections 5.08, 6.01, 6.02 and 6.03, and the provisions contained herein.

This Item shall include the fabrication, delivery, temporary bracing, and installation of a Precast Concrete/Steel Composite Superstructure, consisting of joined Prefabricated Bridge Units (PBUs), including all necessary materials, labor and equipment to complete the work, as shown on the plans. The PBUs are comprised of steel beams made composite with a precast reinforced concrete deck.

The Precast Concrete/Steel Composite Superstructure also includes the deck closure pours and backwalls, as well as the concrete and reinforcing steel for closure pours and backwalls, and other appurtenances that are incidental to the PBU or projecting from the PBU such as lifting lugs, diaphragms/cross frames, bearing bolsters, and projecting reinforcing steel.

Due to the accelerated nature of this project, all PBUs shall be manufactured and accepted 2 weeks prior to the anticipated placement of the distribution slabs.

The Contractor also has the option to build the superstructure with conventional construction methods and not use PBUs, if he develops a schedule which shows that he can achieve Milestone 1 and the schedule is approved by the Engineer. Should the Contractor choose this option, all components of the superstructure from the top of the deck down shall be paid for under this item.

Materials: The materials for Prefabricated Bridge Units shall conform to the following requirements:

Structural steel materials shall conform to the requirements of Section M.06. Shear stud connectors shall conform to the requirements of Subarticle M.06.02-12. All structural steel in the superstructure, except in the bearing assemblies, shall conform to the requirements of AASHTO M270, Grade 50W. This includes the steel girders, bolsters, connection plates, and diaphragms. The sole plates shall conform to AASHTO M270 Grade 50W steel.

Class “F” Concrete shall be used for all concrete elements including, but not limited to, the bridge deck, closure pours, and backwalls. Concrete shall meet the requirements of Article M.03.01, for Class “F” Concrete” and shall have a minimum 28-day compressive strength of 4,400 psi. The use of calcium chloride or an admixture containing calcium chloride will not be permitted.

Reinforcing steel shall be epoxy coated and conform to the requirements of Article M.06.01.

Due to the accelerated nature of this project, the Contractor can utilize high early strength

concrete for backwalls and closure pours in lieu of Class “F” concrete. This shall be done at no additional cost to the State. The materials and work performed shall be in accordance with special provision for the item “High Early Strength Concrete”.

Construction Methods: If the Contractor elects to have the PBUs fabricated off-site, the Fabricator shall have an established Quality Control Management plan which is acceptable to the Engineer. If the Contractor elects to cast the deck of the PBUs on site, he shall follow the applicable sections of Form 816 as well as include his specific methods for not damaging the deck during erection of the PBUs, in his Assembly Plan.

- 1. Shop Drawings:** Prior to any fabrication, the Contractor shall submit shop drawings in accordance with Article 1.05.02-3. Multiple shop drawings may be required for the PBUs since the fabrication can take place in two separate facilities. The Contractor shall coordinate the preparation of the separate shop drawings to ensure that there are no conflicting details. Approval of the shop drawings will be required prior to the ordering of the materials and the fabrication of the prefabricated bridge units.

In addition to the standard detailing of shop drawings, the Contractor shall include the following information:

- a. The stamp of the registered Professional Engineer licensed in the State of Connecticut who has reviewed and certified the shop drawings.
 - b. All lifting inserts, hardware, or devices and locations for Engineer’s approval. All lifting devices shall be designed by the Contractor.
 - c. Locations and details of the lifting devices, including supporting calculations, type, and amount of any additional reinforcing required for lifting. All lifting devices will be designed based on the no cracking criteria in Chapter 8 of the PCI Design Handbook (Seventh Edition).
 - d. Details and methods for accommodating the dimensional requirement of each PBU accounting for profile grade and cross slope.
 - e. Methods for controlling the accumulation of dimensional tolerances through the use of working points or working lines. The width of each individual unit along with the width of the closure pour shall be determined such that, when pieces are laid together, the prefabricated bridge units shall satisfy the required bridge out-to-out width and cross slopes shown on the plans.
 - f. The minimum required compressive strength of the precast concrete deck prior to handling the prefabricated bridge units.
- 2. Assembly Plan:** The Assembly Plan is a document prepared by the Contractor and a qualified Professional Engineer with specific knowledge of the Contractor’s equipment and “means and methods” for constructing the precast elements required to complete the work on the project. The development of this Assembly Plan is closely linked to the schedule of operations and the interim material strengths necessary for the work to progress. The Contractor shall coordinate the development of the Assembly Plans with the development of

the Shop Drawings to ensure consistent detailing. For example, if additional lifting hooks, grout ports, leveling devices, etc. are required, they should be added to the shop drawings prior to approval.

The development of the Assembly Plan and Shop Drawings for the PBUs will not be measured separately for payment and should be considered incidental to this Item.

The Assembly Plan shall be considered a Working Drawing. The development and approval of the Assembly Plan shall be according to Article 1.05.02. Approval of the Assembly Plan will be required prior to the initiation of the full roadway closure.

Under no circumstances shall the fabrication of the prefabricated bridge units commence prior to the approval of the Shop Drawings and the Assembly Plan unless written permission is given by the Engineer. The Department shall reject any components fabricated before receiving written approval or components that deviate from the approved drawings. Any expenses incidental to the revision of materials furnished, in accordance with the Shop Drawings and order lists, to make them comply with the plans and specifications, including costs incurred due to faulty detailing or fabrication, shall be borne by the Contractor.

At a minimum, the Assembly Plan shall include the following information:

- a) Details and/or cut sheets of all equipment that will be employed for the assembly of the prefabricated bridge units.
- b) Details of all equipment to be used to lift the PBUs including cranes, excavators, lifting slings, sling hooks, and jacks. Crane locations, operation radii, and lifting calculations will also be included. The factors of safety for the lifting of PBUs will be achieved by using 125% of the weight of the PBU being lifted. The Contractor is responsible for determining the center of gravity for all PBUs. Special care shall be used for PBUs that are not symmetrical. These elements may require special lifting hardware to allow for installation to the grades shown on the plans.
- c) The Assembly plan shall address the potential for tension in the precast deck during shipping and handling. Allowable tension stresses in the concrete shall be according Chapter 8 of the PCI Design Handbook (seventh edition). Calculations shall be prepared for the lifting and handling in accordance with the no discernible cracking criteria. Lifting hook locations and hardware shall be coordinated with the Fabricator(s).
- d) A statement of compliance with all requirements of applicable environmental permits.
- e) A work area plan, depicting all affected utilities, drainage, and protective measures that will be employed throughout the construction activities.
- f) Full size 22"x34" sheets depicting the assembly procedures for the PBUs.
- g) A detailed schedule with the timeline for all operations. In development of the schedule the Contractor shall account for setting and cure times for concrete closure pours.

- h) Methods of adjusting and securing the elements after placement.
- i) Procedures for controlling erection tolerances for both the horizontal and vertical direction.
- j) Methods of forming closure pours.
- k) Material used for and methods for curing the closure pours. The Contractor shall include detailed description of curing materials if casting is anticipated during times when wet weather can be anticipated.
- l) Material used for the backwalls.
- m) The Assembly Plan shall be bound into one complete document and shall be prepared and stamped by a registered Professional Engineer licensed in the State of Connecticut.

- 3. Installation:** The field personnel shall have knowledge of and follow the approved Assembly Plan. If changes are warranted due to varying site conditions, resubmit the plan for review and approval.

Working points, working lines, and benchmark elevations shall be established prior to placement of all elements. The Contractor is responsible for field survey as necessary to complete the work. The District reserves the right to perform additional independent survey. This survey does not relieve the Contractor from performing survey for the construction. If discrepancies are found, the Contractor may be required to verify previous survey data.

The PBUs shall be placed in the sequence and according to the methods outlined in the Assembly Plan. The height of each element will be adjusted to acceptable tolerances by means of leveling devices or shims. The Contractor shall ensure that the PBU is in the proper horizontal and vertical location prior to releasing from the crane and setting the next unit. Vertical tolerance needs to be checked at the top surface of the PBU. Diaphragms may be used to control geometry; however if the required setting tolerance cannot be met, the Contractor may be required to adjust or fabricate new diaphragms.

4. Erection Tolerances:

- a) Plan Alignment: Location and Clearances

The Contractor shall adhere to the following tolerances for the final condition of the PBU after placement:

- i. Do not exceed 1/4 inch maximum deviation at each end of the span from overall longitudinal alignment after setting.
- ii. Do not exceed 1/4 inch maximum deviation from overall transverse location (i.e. longitudinal position) at each line of bearings.
- iii. Maximum deviation from alignment in both primary plan directions at each end of the span being set shall not exceed 1/4 inch or that required for the accommodation of manufactured expansion joint components or bearings,

whichever is the less.

- iv. In the absence of other constraints, keep individual elements or surfaces within 1/4 inch of location with respect to similar matching surfaces.

b) Bridge Bearings: Elevation and Location

The Contractor shall keep the elevation of individual bridge bearings within plus or minus 1/8 inch of required elevations. The plan location of bridge bearings shall be within a tolerance of 1/8 inch and the alignment within plus or minus 1/16 inch across the bearing.

If tolerances are not met, submit for approval of Engineer, means to adjust elevations or to correct for or accommodate errors or unintended deviations from required tolerances. Submit proposals and seek approval of the Engineer for the use of shims, injection of high strength grout or other methods to accommodate differences from required tolerance. Do likewise, for the accommodation of anchor bolts or similar restraining devices.

5. Quality Control: At a minimum, the following requirements shall be met:

- a) The reinforced concrete deck on top of the girder pairs shall be fabricated by a precast fabricator that is approved by the Department. The fabricator shall follow the Department's approved quality control procedures.
- b) The PBUs will be constructed to tolerances shown on the plans. Where tolerances are not shown, follow tolerance limits in the PCI MNL 116-99, "Manual for Quality Control for Plants and Production of Structural Precast Concrete Products, 4th Edition". Elements that are found to be out of tolerance may be subject to rejection. Rejection of the elements may be waived by the Engineer if the Contractor can demonstrate that the out of tolerance element can be installed without significant modifications to the bridge. For example, an over width element may be acceptable if the adjacent element is under width.
- c) The Contractor is required to provide field survey to determine that the PBUs are placed within the horizontal and vertical tolerances stated on the plans.
- d) The Contractor is responsible for interim testing of concrete placed in the field to allow the work to proceed with various stages of construction. For example, if the approved Assembly Plan allows for loads to be placed on the PBU after the closure pour concrete has achieved a specific compressive strength which is lower than the final design compressive strength, the Contractor will be required to test the concrete proving that the strength has been achieved. For materials used throughout the construction that have a proven strength gain at predetermined time interval, the compressive testing requirements may be waived by the Engineer. All testing furnished by the Contractor shall be performed by an AASHTO accredited laboratory. All Quality Control test results shall be submitted to the Division of Materials Testing section for approval. Additional testing by the Contractor will be

- performed at no additional cost and will not be measured for payment. Final acceptance testing of concrete shall be in accordance with Article 6.01.03.
- e) The fabricator and Contractor shall prevent cracking or damage of the PBUs during handling, storage, transportation, and final installation in permanent position.
 - f) If damage occurs, replace defects and breakage of the PBUs in accordance with the following:
 - i. Members that sustain damage or surface defects during fabrication, handling, storage, hauling, or erection are subject to review or rejection.
 - ii. Approval must be obtained before performing repairs.
 - iii. Repair work must re-establish the elements' structural integrity, durability, and aesthetics to the satisfaction of the Engineer.
 - iv. Determine the cause when damage occurs and take corrective action.
 - v. Failure to take corrective action, leading to similar repetitive damage, can be cause for rejection of the damaged element.
 - vi. Cracks that extend to the nearest reinforcement plane and fine surface cracks that do not extend to the nearest reinforcement plane but are numerous or extensive are subject to review and rejection.
 - g) The plant will document all test results. The quality control file will contain at least the following information:
 - i. Element identification
 - ii. Date and time of casting
 - iii. Concrete cylinder test results
 - iv. Quantity of used concrete and the batch printout
 - v. Form-stripping date and repairs if applicable
 - vi. Location/number of blockouts and lifting inserts
 - vii. Temperature and moisture of curing period
 - viii. Document lifting device details, requirements, and inserts
- 6. Marking:** Permanently mark each prefabricated bridge unit with the date of casting and supplier identification. Stamp markings in fresh concrete.
- 7. Handling and Storage:** Materials for this work shall be stored off the ground before, during, and after fabrication. The PBUs shall be kept free from dirt, grease and other contaminants and shall be reasonably protected from corrosion. Care shall be taken during storage, transporting, hoisting and handling of all prefabricated units to prevent damage. Units damaged by improper storing, transporting or handling shall be repaired or replaced by the Contractor, as directed by the Engineer and at no cost to the State. All storage and handling operations shall be as directed by the Engineer.

- 8. Special Considerations:** Regardless of whether the Contractor chooses to fabricate the PBUs on site or off site, the PBUs must be fabricated in the same orientation as they will be in their final location on the substructure. This means that all steel girders and cross frames must be assembled on the temporary supports and all deck formwork must be in place and be continuous between girders prior to placing the concrete for the deck. When the deck concrete is placed, it shall be placed across the full width of the deck (excluding the areas of the closure pours) in a continuous operation
- 9. Conventional Construction Option:** If the Contractor elects to build the superstructure without the use of PBUs, the construction methods shall be in accordance with the requirements of the applicable sections of Form 816 and the special provisions.

Method of Measurement: This work will be measured for payment by the actual area of the bridge deck fabricated and accepted in its final location. The area of bridge deck shall be calculated using the measured length from back face of backwall to back face of backwall and the measured width from outside fascia to outside fascia of the concrete deck. Measurements will be made across the top (horizontal) surface of the concrete deck without deduction for closure pours, if used. There will be no measurement for payment of any vertical face along the backwall or PBU.

Structural steel, concrete and reinforcing steel for deck, backwalls and closure pours, reinforcing bar extensions projecting from PBU's, bearing bolsters, transportation, erection, and installation of PBU's will not be measured separately for payment, regardless of the option used for construction.

Basis of Payment: This work will be paid for at the contract unit price per square foot for "Precast Concrete/Steel Composite Superstructure", complete and in place accepted. The price shall include all tools, material, equipment, labor and work incidental to the construction.

Payment for work and materials described above or as noted on the plans or as ordered by the Engineer being incidental to the construction of the PBUs, closure pours and backwalls shall be included in the unit price for this item.

<u>Pay Item</u>	<u>Pay Unit</u>
Precast Concrete/Steel Composite Superstructure	S.F.

ITEM 0601107A – HIGH EARLY STRENGTH CONCRETE

Work under this item shall conform to Section 6.01 Concrete for Structures as supplemented and amended herein to provide for High Early Strength Concrete.

6.01.01 – Description: Add the following

High early strength concrete may be used to accelerate the construction of the bridge. The goal of this work is:

- Meet the required compressive strength (both interim and final) in an accelerated manner.
- Reduce the cure time for the concrete
- Provide durable (low permeability) concrete
- Provide low shrinkage properties to reduce cracking in the field

The Contractor shall develop a high early strength concrete mix design for use as indicated on the plans or as ordered by the Engineer.

6.01.02 – Materials: Add the following:

The high early strength concrete shall conform to the requirements of M.03.01 and the following criteria:

1. Portland cement shall be Type II, IIA or III conforming to AASHTO M85 or M240, as appropriate.
2. All cement used in the manufacture of the members shall be the same brand, type and color, unless otherwise permitted.
3. Use Portland cement conforming to AASHTO M85 with compatible admixtures and air entraining agent.
4. Water-cementitious material ratio shall not exceed 0.4 by weight, including water in the admixture solution and based on saturated surface dry condition of aggregates.
5. Use a maximum size coarse aggregate of $\frac{3}{4}$ ".
6. The amount of entrained air shall be 6.0 +/- 1.5%.
7. High early strength concrete shall achieve its required compressive strength sooner than 28-days.
8. The early strength characteristics of the concrete shall be commensurate with the intended construction procedure that is developed by the Contractor in the Assembly Plan.
9. A shrinkage reducing admixture shall be added to the concrete mix according to the manufacturer's recommendation such that there will be no cracks at 14 days in the sample tested in AASHTO T334 (see below). A shrinkage reducing admixture shall be tested by an approved testing lab and meet the requirements of ASTM C494-10 Type S, except that in Table 1 length change shall be measured as: Length Change (percent of control) shall be a minimum of 35% less than that of the control. Table 1 Length Change (increase over control) shall not apply. Shrinkage reducing admixtures shall not contain expansive metallic materials.
10. The maximum allowable total chloride content in concrete shall not exceed 0.1% by

weight of cement.

Mix Design Requirements

Concrete shall be controlled, mixed, and handled as specified in the pertinent portions of Section 6.01 Concrete for Structures, Supplemental Specifications and as indicated below:

The Contractor shall design and submit for approval the proportions and test results for a concrete mix which shall attain the minimum final design compressive strength and the early compressive strength as defined by the approved Assembly Plan and consistent with the approved Quality Control Plan.

The concrete mix design shall have a rapid chloride ion permeability of 2000 Coulombs at not more than 28 days using AASHTO T 277 and the air entrainment shall be targeted at a value of 6.5 percent \pm 1.5 percent. Contractor may opt to take multiple tests prior to 28 days which will be considered accepted once the target value of 2,000 coulombs is reached. Testing shall be in accordance with AASHTO T 119 and T 152. Multiple samples should be tested using the intended curing methods in order to establish the required cure times for the mix.

Should a change in sources of material be made, a new mix design shall be established and approved prior to incorporating the new material. When unsatisfactory results or other conditions make it necessary, the Department will require a new mix design.

The concrete mix design shall be submitted to the Department for review and approval. The Department shall be notified at least 48 hours prior to the test batching and shall be present to witness the testing.

All tests necessary to demonstrate the adequacy of the concrete mix shall be performed by the Contractor, witnessed by the Department, including, but not limited to: slump, air content, temperature, initial set and final set (AASHTO T197). Compressive strength tests shall be determined on field cured cylinders (6" X 12" cylinders) at 9 hours, 12 hours, 15 hours, 18 hours, 24 hours, 30 hours, 36 hours, 42 hours, 2 days and 3 days, and standard cured cylinders at 7 days and 28 days. Additionally, a confined shrinkage test as outlined in the AASHTO T334 - Practice for Estimating the Crack Tendency of Concrete shall be performed by an AASHTO accredited laboratory. The results of these tests (documenting zero cracks at 14 days) shall be submitted to the Department.

Field Trial Placement

In addition, a trial placement shall be done a minimum of (90) ninety days before the intended date of the initial closure pour placement. The Contractor will be required to demonstrate proper mix design, batching, placement, finishing and curing of the high early strength concrete. The trial placement shall simulate the actual job conditions in all respects including plant conditions, transit equipment, travel conditions, admixtures, forming, the use of bonding compounds, restraint of adjacent concrete, placement equipment, and personnel.

The trial shall also demonstrate the ability of the concrete to accept the installation of the

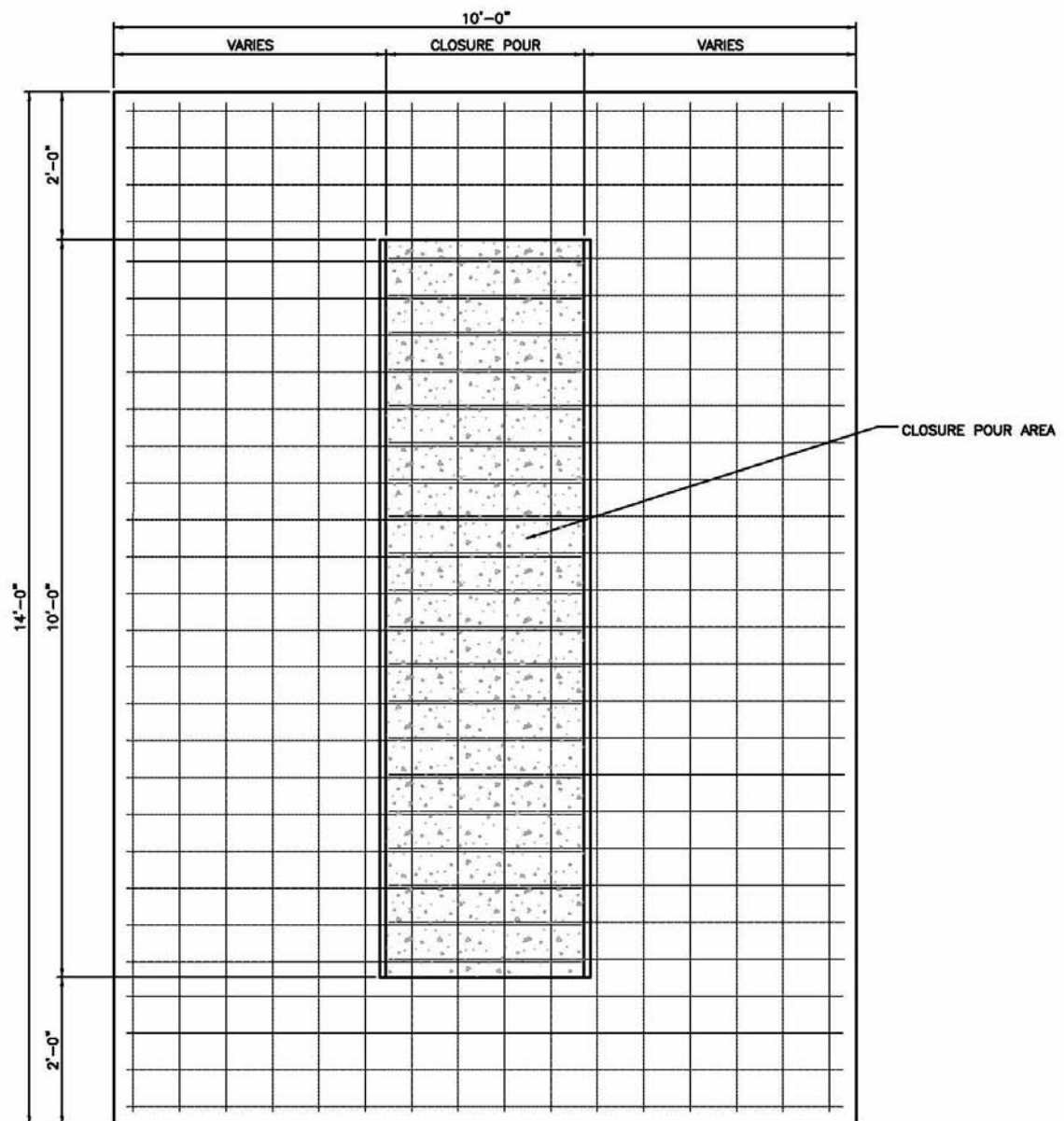
membrane waterproofing system that is to be used. A representative portion of the trial concrete shall be coated with the membrane waterproofing in accordance with the specifications for the waterproofing. The timing of the installation of the waterproofing on the trial concrete shall be commensurate with the intended construction procedure and schedule that is developed by the Contractor. The Contractor shall demonstrate that the waterproofing meets all the requirements of the specifications.

The details for the trial placement configuration are shown in Figure 1. Acceptance criteria for the trial placement shall be as follows:

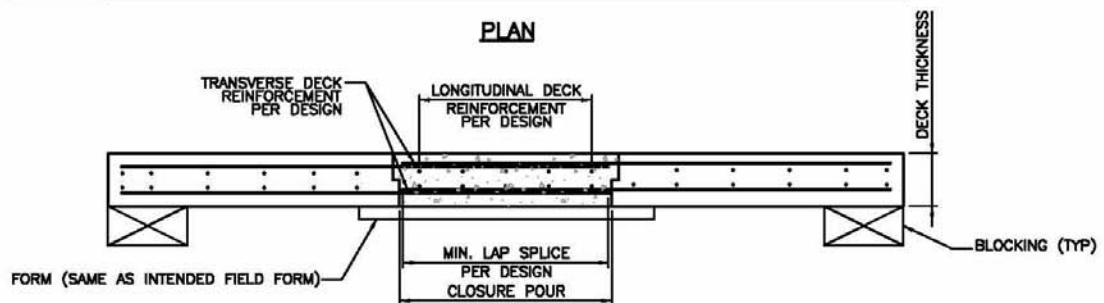
- The trial placement concrete shall not exhibit cracking or separation from the test panel in excess of 0.016 inches wide
- There shall be no more than one transverse crack in excess of 0.010 inches wide in the 10 foot long pour.
- The evaluation of the trial placement shall take place 14 days after placement.

If the trial placement fails these criteria, the Contractor will be required to submit a corrective action plan on how repairs of these crack sizes will be performed. The Department may require the Contractor to conduct more trial batches and trial placements. The costs of trial batches, trial placements and the removal of trial placement concrete from the job site is incidental to the work and will not be measured for payment. The requirement for multiple test placements shall not be cause for a time extension.

The final accepted trial placement testing shall be used to establish the final acceptance testing protocol for the field placements.



PLAN



TYPICAL SECTION

FIGURE 1 - TRIAL PLACEMENT TEST SET-UP

6.01.03 Construction Methods: Add the following:

The Contractor shall engage an AASHTO accredited laboratory to provide testing facilities which are qualified laboratories under the NETTCP program to perform all Quality Control field testing. All personnel performing tests shall be qualified NETTCP Concrete Technicians and certified ACI Laboratory and Concrete Strength Technicians. Anytime the Contractor moves the laboratory, all associated equipment shall be recalibrated. This requirement is intended to minimize the movement of test cylinders.

The Contractor is required to perform initial set and final set tests (AASHTO T197) in addition to slump, air content and temperature on concrete from each concrete truck used in the placing of this High Early Strength Concrete. Field cured cylinders (6" X 12" cylinders) will be made from the first and last concrete trucks. A set of three (3) field- cured cylinders shall be made for each informational test associated with early structural loading. The Contractor is advised to fabricate adequate sets of cylinders to allow multiple tests to verify field concrete strength. The Department shall be allowed to witness the test and comment on all the tests performed by the Contractor. The Contractor shall not open the roadway to traffic until the final strength has been met and when the Department has directed that the roadway can be opened to traffic.

All testing and equipment shall conform to AASHTO T-22, and the making and curing of concrete cylinders shall conform to AASHTO T23. All costs associated with the on-site mobile testing facilities, personnel and field testing, equipment calibration and verification to demonstrate the field concrete strength shall be incidental to the work.

Acceptance tests will be performed by the Department on standard cured cylinders at 7 days and 28 days. Cylinder breaks at 3 days and 7 days must be at least 10% above the approved trial batch results. The Contractor will be notified of any verification tests that do not meet these requirements and will be required to develop a contingency corrective action plan in case final strength is not achieved. Concrete will be accepted based on meeting the 28-day strength requirement of 4000 psi.

Curing Methods

The concrete curing methods shall be developed by the Contractor as part of the Quality Control Plan. The curing methods used in the production placements shall be the same as the curing methods used for the trial placement.

High Early Strength Concrete Crack Inspection

The Contractor shall inspect the finished high early strength concrete surface for cracks. Inspection for cracking within the distribution slab closure pour shall be completed prior to the erection of Prefabricated Bridge Units. Inspection for cracking within deck closure pours and backwalls shall be completed prior to the preparation of the deck for placement of the membrane waterproofing system, if high early strength concrete is used for these components.

The Contractor shall document the location and frequency of cracks (number of cracks per square foot) and submit to the Engineer for review. Cracks greater than 0.016 inches in width or as ordered by the Engineer shall be repaired at no additional cost to the State.

Method of Measurement: Add the following:

If high early strength concrete is used for the deck closure pours between Prefabricated Bridge Units or for the backwalls, it shall not be measured for payment under this item.

Basis of Payment: Add the following

The work completed under this Item will be paid for at the contract price per actual number of cubic yards of high early strength concrete completed in place and accepted. Payment under this Item includes full compensation for all testing and approval of the mix design.

Pay Item

Pay Unit

High Early Strength Concrete

C.Y.

ITEM #0707009A – MEMBRANE WATERPROOFING (COLD LIQUID ELASTOMERIC)

Description: Work under this item consists of furnishing and installing a seamless elastomeric waterproofing membrane system applied to a concrete or steel surface as shown on the plans, in accordance with this specification and as directed by the Engineer. Work shall also include conditioning of the surface to be coated and all quality-control testing noted herein.

The completed membrane system shall be comprised of a primer coat followed by the membrane coating which is applied in one or two layers for a minimum total thickness of 80 mil (2 mm), an additional 40 mil (1mm) membrane layer with aggregate broadcast into the material while still wet, and a bond coat of bitumen-based adhesive material.

Materials: The Contractor shall select a waterproofing membrane system from the Department's current Qualified Product List (QPL) for Spray-Applied Membrane Waterproofing System. All materials incorporated in the works shall meet the Manufacturer's specification for the chosen system. The Engineer will reject any system that is not on the QPL.

Materials Certificate: The Contractor shall submit to the Engineer a Materials Certificate for the primer and membrane and bond coat material in accordance with the requirements of Article 1.06.07.

Construction Methods: At least ten days prior to installation of the membrane system, the Contractor shall submit to the Engineer, the manufacturer's recommended procedure for preparing the deck surface, pre-treatment or preparing at cracks and gaps, treatment at curbs, vertical surfaces or discontinuities, applying the primer and membrane, and placing of aggregated coat. Procedures shall also include recommended repairs of system non-compliant issues identified during application. The system shall be applied to the prepared area(s) as defined in the plans strictly in accordance with the Manufacturer's recommendations.

A technical representative, in the direct employ of the manufacturer, shall be present on-site immediately prior to and during application of the membrane. The representative shall inspect and approve the surface prior to priming, and provide guidance on the handling, mixing and addition of components and observe application of the primer and membrane. The representative shall perform all required quality-control testing and remain on the Project site until the membrane has fully cured.

All quality-control testing, including verbal direction or observations on the day of the installation, shall be recorded and submitted to the Engineer for inclusion in the Project's records. A submittal of the quality-control testing data shall be received by project personnel prior to any paving over the finished membrane or within 24 hours following completion of any staged portion of the work.

1. **Applicator Approval:** The Contractor's membrane Applicator shall be fully trained and licensed by the membrane manufacturer and shall have successfully completed at least three spray membrane projects in the past five years. The Contractor shall furnish references from those projects, including names of contact persons and the names, addresses and phone numbers of persons who supervised the projects. This information shall be submitted to the Engineer prior to the start of construction. The Engineer shall have sole authority to determine the adequacy and compliance of the submitted information. Inadequate proof of ability to perform the work will be grounds to reject proposed applicators.

2. **Job Conditions:**

(a) **Environmental Requirements:** Air and substrate temperatures shall be between 32°F (0°C) and 104°F (40°C) providing the substrate is above the dew point. Outside of this range, the Manufacturer shall be consulted.

The Applicator shall be provided with adequate disposal facilities for non hazardous waste generated during installation of the membrane system. The applicator shall follow safety instructions regarding respirators and safety equipment.

(b) **Safety Requirements:** All open flames and spark producing equipment shall be removed from the work area prior to commencement of application.

"No Smoking" signs shall be visibly posted at the job site during application of the membrane waterproofing.

Personnel not involved in membrane application shall be kept out of the work area.

3. **Delivery, Storage and Handling:**

(a) **Packaging and Shipping:** All components of the membrane system shall be delivered to the site in the Manufacturer's packaging, clearly identified with the products type and batch number.

(b) **Storage and Protection:** The Applicator shall be provided with a storage area for all components. The area shall be cool, dry and out of direct sunlight and shall be in accordance with the Manufacturer's recommendations and relevant health and safety regulations.

Copies of Material Safety Data Sheets (MSDS) for all components shall be kept on site for review by the Engineer or other personnel.

(c) **Shelf Life - Membrane Components:** Packaging of all membrane components shall include a shelf life date sealed by the Manufacturer. No membrane components whose shelf life has expired shall be used.

4. Surface Preparation:

- (a) Protection: The Applicator shall be responsible for the protection of equipment and adjacent areas from over spray or other contamination. Parapets and bridge joints shall be masked prior to application of the materials.
- (b) Surface Preparation: Sharp peaks and discontinuities shall be ground smooth. The surface profile of the prepared substrate is not to exceed 1/4 inch (6 mm) (peak to valley) and areas of minor surface deterioration of 1/2 inch (13 mm) and greater in depth shall also be repaired. The extent and location of the surface patches require the approval of the Engineer before the membrane system is applied.

Surfaces shall be free of oil, grease, curing compounds, loose particles, moss, algae, growth, laitance, friable matter, dirt, bituminous products, and previous waterproofing materials. If required, degreasing shall be done by detergent washing in accordance with ASTM D4258.

The surface shall be abrasively cleaned, in accordance with ASTM D4259, to provide a sound substrate free from laitance.

Voids, honeycombed areas, and blow holes on vertical surfaces shall be repaired in the same manner.

All steel components to receive membrane waterproofing shall be blast cleaned in accordance with SSPC SP6 and coated with the membrane waterproofing system within the same work shift.

5. Inspection and Testing: Prior to priming of the surface, the Engineer, Applicator and Manufacturer's technical representative shall inspect and approve the prepared substrate.

- (a) Random tests for deck moisture content shall be conducted on the substrate by the Applicator at the job site using a "Sovereign Portable Electronic Moisture Master Meter," a "Tramex CMEXpertII Concrete Moisture Meter" or approved equal. The minimum frequency shall be one test per 1000 s.f. (100 sq.m) but not less than three tests per day per bridge. Additional tests may be required if atmospheric conditions change and retest of the substrate moisture content is warranted.

The membrane system shall not be installed on substrate with a moisture content greater than that recommended by the system's manufacturer, but shall not be greater than 6%, whichever is less.

- (b) Random tests for adequate tensile bond strength shall be conducted on the substrate using an adhesion tester in accordance with the requirements of ASTM D4541. The

minimum frequency shall be one test per 5,000 s.f. (500 sq.m) but not less than three adhesion tests per bridge.

Adequate surface preparation will be indicated by tensile bond strengths of primer to the substrate greater than or equal to 150 psi (1.0 MPa) or failure in a concrete surface and greater than or equal to 300 psi (2.1 MPa) for steel surfaces.

If the tensile bond strength is lower than the minimum specified, the Engineer may request additional substrate preparation. Any primer not adequately applied shall be removed and a new primer applied at the Contractor's expense, as directed by Engineer.

- (c) Cracks and grouted joints shall be treated in accordance with the Manufacturer's recommendations, as approved or directed by the Engineer.

6. Application:

- (a) The System shall be applied in four distinct steps as follows:
 - 1) Substrate preparation and gap/joint bridging preparation
 - 2) Priming
 - 3) Membrane application
 - 4) Membrane with aggregate
- (b) Immediately prior to the application of any components of the System, the surface shall be dry (see Section 5a of this specification) and any remaining dust or loose particles shall be removed using clean, dry oil-free compressed air or industrial vacuum.
- (c) Where the area to be treated is bound by a vertical surface (e.g. curb or wall), the membrane system may be continued up the vertical, as shown on the plans or as directed by the Engineer.
- (d) The handling, mixing and addition of components shall be performed in a safe manner to achieve the desired results, in accordance with the Manufacturer's recommendations or as approved or directed by the Engineer.
- (e) A neat finish with well defined boundaries and straight edges shall be provided by the Applicator.
- (f) Primer: The primer shall consist of one coat with an overall coverage rate of 125 to 175 s.f./gal (3.0 to 4.3sq.m/1) unless otherwise recommended in the manufacturer's written instructions.

All components shall be measured and mixed in accordance with the Manufacturer's recommendations.

The primer shall be spray applied using a single component spray system approved for use by the Manufacturer. If required by site conditions and allowed by the manufacturer, brush or roller application will be allowed.

The primer shall be allowed to cure tack-free for a minimum of 30 minutes or as required by the Manufacturer's instructions, whichever time is greater, prior to application of the first lift of waterproofing membrane.

Porous concrete (brick) may require a second coat of primer should the first coat be absorbed.

- (g) Membrane: The waterproofing membrane shall consist of one or two coats for a total dry film thickness of 80 mils (2 mm). If applied in two coats, the second coat shall be of a contrasting color to aid in quality assurance and inspection.

The membrane shall be comprised of Components A and B and a hardener powder which is to be added to Component B in accordance with the Manufacturer's recommendations.

The substrate shall be coated in a methodical manner.

Thickness checks: For each layer, checks for wet film thickness using a gauge pin or standard comb-type thickness gauge shall be carried out typically once every 100 s.f. (9 sq.m). Where rapid set time of the membrane does not allow for wet film thickness checks, ultrasonic testing (steel surfaces only), calibrated point-penetrating (destructive) testing, in-situ sampling (cutout of small sections for measuring thicknesses), or other methods approved by the Engineer shall be employed for determination of dry film thickness. The measured thickness of each and every individual test of the membrane shall be greater than or equal to the required thickness.

Bond Strength: Random tests for adequate tensile bond strength shall be conducted on the membrane in accordance with the requirements of ASTM D4541. The minimum test frequency shall be one test per 5,000 s.f. (500 sq.m) but no less than three adhesion tests per bridge. Adequate adhesion will be indicated by tensile bond strengths of the membrane to the substrate of greater than or equal to 150 psi (0.7 MPa) or failure in a concrete surface and greater than or equal to 300 psi (2.1 MPa) for steel surfaces.

Spark Testing: Following application of the membrane, test for pin holes in the cured membrane system over the entire application area in accordance with ASTM D4787- "Continuity Verification of Liquid or Sheet Linings Applied to Concrete Substrates." Conduct the test at voltages recommended by the manufacturer to prevent damage to the membrane.

Repair the membrane system following destructive testing and correct any deficiencies in the membrane system or substrate noted during quality-control testing in accordance with the manufacturer's recommendations to the satisfaction of the Engineer at no additional cost to the State.

- (h) Repairs: If an area is left untreated or the membrane becomes damaged, a patch repair shall be carried out to restore the integrity of the system. The damaged areas shall be cut back to sound materials and wiped with solvent (e.g. acetone) up to a width of at least four inches (100 mm) on the periphery, removing any contaminants unless otherwise recommended by the manufacturer. The substrate shall be primed as necessary, followed by the membrane. A continuous layer shall be obtained over the substrate with a four inches (100 mm) overlap onto existing membrane.

Where the membrane is to be joined to existing cured material, the new application shall overlap the existing by at least four inches (100 mm). Cleaning and surface preparation on areas to be lapped shall be as recommended in the manufacturer's written instructions.

- (i) Aggregated Finish:
 - 1) Apply an additional 40 mil (1 mm) thick layer of the membrane material immediately followed by an aggregate coating, before the membrane cures, at a rate to fully cover the exposed area. The membrane and aggregate shall be fully integrated after the aggregate has been applied and the membrane cured.
 - 2) Localized areas not fully coated shall be touched-up with additional membrane and aggregate as needed.
 - 3) Remove loose and excess aggregate from the surface to the satisfaction of the Engineer and dispose of properly after application prior to allowing traffic onto finished surface or application of tack coat.
- (j) Bond Coat:
Prior to application of a bituminous concrete overlay, the aggregated finish shall be coated with a bonding material. The bonding material shall be per the membrane waterproofing manufacturer's recommendations.

7. Final Review: The Engineer and the Applicator shall jointly review the area(s) over which the completed System has been installed. Any irregularities or other items that do not meet the requirements of the Engineer shall be addressed at this time.

Method of Measurement: The quantity to be paid for under this item shall be the number of square yards (square meters) of waterproofed surface completed and accepted.

Basis of Payment: This item will be paid for at the contract unit price per square yard (square meter) of “Membrane Waterproofing (Cold Liquid Elastomeric),” complete in place, which price shall include all surface preparation, furnishing, storing and applying the system, technical representative and quality control tests, and any necessary repairs and remediation work as well as all materials, equipment, tools, labor incidental to this work.

<u>Pay Item</u>	<u>Pay Unit</u>
Membrane Waterproofing (Cold Liquid Elastomeric)	s.y. (sq.m)



Connecticut Department of
Energy & Environmental Protection
Bureau of Materials Management & Compliance Assurance
Water Permitting & Enforcement Division

General Permit Registration Form for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities, effective 10/1/13 (electronic form)

Prior to completing this form, you **must** read the instructions for the subject general permit at [DEEP-WPED-INST-015](#). This form must be filled out electronically before being printed. You must submit the registration fee along with this form.

The [status of your registration](#) can be checked on the DEEP's ezFile. Portal. Please note that DEEP will no longer mail certificates of registration.

Part I: Registration Type

Select the appropriate boxes identifying the registration type and registration deadline.

CPPU USE ONLY

App #: _____

Doc #: _____

Check #: _____

Program: Stormwater

Registration Type		Registration Timeline	
<input type="checkbox"/>	Re-registration Existing Permit No. GSN _____	On or before February 1, 2014* *Note: Failure to renew a permit by this date will require submission of new registration. Re-registrants must only complete Parts I, II, III, IV - Question 1, VII and submit Attachment A.	
<input checked="" type="checkbox"/>	New Registration (Refer to Section 2 of the permit for definitions of Locally Exempt and Locally Approvable Projects)	<input type="checkbox"/> Locally Approvable Size of soil disturbance: _____	New registration - Sixty (60) days prior to the initiation of the construction activity for: For sites with a total soil disturbance area of 5 or more acres
		<input checked="" type="checkbox"/> Locally Exempt Size of soil disturbance: 3.84	<input checked="" type="checkbox"/> New registration - Sixty (60) days prior to the initiation of the construction activity for: Sites with a total disturbance area of one (1) to twenty (20) acres except those with discharges to impaired waters or tidal wetlands
			<input type="checkbox"/> New registration - Ninety (90) days prior to the initiation of the construction activity for: (i) Sites with a total soil disturbance area greater than twenty (20) acres, or (ii) Sites discharging to a tidal wetland (that is not fresh-tidal and is located within 500 feet), or (iii) Sites discharging to the impaired water listed in the "Impaired Waters Table for Construction Stormwater Discharges"

Part II: Fee Information

1. New Registrations

a. Locally approvable projects (registration only):

☐ \$625

b. Locally exempt projects (registration and Plan):

☒ \$3,000 total soil disturbance area \geq one (1) and < twenty (20) acres.

☐ \$4,000 total soil disturbance \geq twenty (20) acres and < fifty (50) acres.

☐ \$5,000 total soil disturbance \geq fifty (50) acres.

2. Re-Registrations

☐ \$625 (sites previously registered prior to September 1, 2012)

☐ \$0 (sites previously registered between to September 1, 2012 and effective date of this permit)

Total Fee: \$3,000.00

The fees for municipalities shall be half of those indicated in subsections (a), (b) and (c) above pursuant to Section 22a-6(b) of the Connecticut General Statutes. State and Federal agencies shall pay the full fees specified in this subsection. The registration will not be processed without the fee. The fee shall be non-refundable and shall be paid by certified check or money order payable to the Department of Energy and Environmental Protection.

Part III: Registrant Information

- If a registrant is a corporation, limited liability company, limited partnership, limited liability partnership, or a statutory trust, it must be registered with the Secretary of the State. If applicable, the registrant's name shall be stated **exactly** as it is registered with the Secretary of the State. This information can be accessed at [CONCORD](#)
- If a registrant is an individual, provide the legal name (include suffix) in the following format: First Name; Middle Initial; Last Name; Suffix (Jr, Sr., II, III, etc.).

1. Registrant /Client Name: <u>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</u>		
Registrant Type: <u>State Agency</u>		
Secretary of the State business ID #: _____		
Mailing Address: <u>140 Pond Lily Ave</u>		
City/Town: <u>New Haven</u>	State: <u>CT</u>	Zip Code: <u>06515</u>
Business Phone: <u>(203) 389-3100</u>	ext.: _____	
<i>Example:(xxx) xxx-xxxx</i>		
Contact Person: <u>Domenic LaRosa</u>	Title : <u>District III Engineer</u>	
E-Mail: <u>domenic.larosa@ct.gov</u>		
2. List billing contact:		
Name: <u>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</u>		
Mailing Address: <u>140 Pond Lily Ave</u>		
City/Town: <u>New Haven</u>	State: <u>CT</u>	Zip Code: <u>06515</u>
Business Phone: <u>(203) 389-3100</u>	ext.: _____	
Contact Person: <u>Domenic LaRosa</u>	Title : <u>District III Engineer</u>	

3. List primary contact for departmental correspondence and inquiries:

Name: STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION

Mailing Address: 140 Pond Lily Ave

City/Town: New Haven

State: CT

Zip Code: 06515

Business Phone: (203) 389-3100

ext.

Contact Person: Domenic LaRosa

Title: District III Engineer

4. List owner of the property on which the activity will take place:

Name: STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION

Mailing Address: 140 Pond Lily Ave

City/Town: New Haven

State: CT

Zip Code: 06515

Business Phone: (203) 389-3100

ext.

Contact Person: Domenic LaRosa

5. List preparer:

Name: CME ASSOCIATES, INC.

Mailing Address: 333 E River Dr

City/Town: East Hartford

State: CT

Zip Code: 06108

Business Phone: (860) 290-4100

ext.

Contact Person: CHARLES EATON

Title:

6. List design professional:

Name: CME ASSOCIATES, INC.

Mailing Address: 333 E River Dr

City/Town: East Hartford

State: CT

Zip Code: 06108

Business Phone: (860) 290-4100

ext.

Contact Person: CHARLES EATON

Title:

7. List Reviewing Qualified Professional (for locally approvable projects only):

Name:

Mailing Address:

City/Town:

State:

Zip Code:

Business Phone:

ext.

Contact Person:

Title:

Part IV: Site Information

1. Site Name: Replacement of Bridge 03120 100-178

Street Address or Description of Location: 171 Bassett Rd

City/Town: North Haven Town of

State: CT

Zip Code: 06473

Brief Description of construction activity:

Replacement of Bridge 03120 Bassett Road over I-91

Project Start Date: 3 Apr 2017

Anticipated Completion Date: 30 Nov 2017

Normal working hours: 8 to 4

2. **MINING** : Is the activity on the site in question part of mining operations (i.e. sand and gravel)? ☐ Yes ☒ No

If yes, mining is not authorized by this general permit. You must submit the Registration Form for the General Permit for the Discharge of Stormwater Associated with Industrial Activity.

3. **COMBINED OR SANITARY SEWER**: Does all of the stormwater from the proposed activity discharge to a combined or sanitary sewer (i.e. a sewage treatment plant)? ☐ Yes ☒ No

If yes, this activity is not regulated by this permit. Contact the Water Permitting & Enforcement Division at 860-424-3018.

4. **INDIAN LANDS**: Is or will the facility be located on federally recognized Indian lands? ☐ Yes ☒ No

5. **COASTAL BOUNDARY**: Is the activity which is the subject of this registration located

within the coastal boundary as delineated on DEEP approved coastal boundary maps? ☐ Yes ☒ No

The coastal boundaries fall within the following towns: Branford, Bridgeport, Chester, Clinton, Darien, Deep River, East Haven, East Lyme, Essex, Fairfield, Greenwich, Groton (City and Town), Old Lyme, Guilford, Hamden, Ledyard, Lyme, Madison, Milford, Montville, New London, New Haven, North Haven, Norwalk, Norwich, Old Saybrook, Orange, Preston, Shelton, Stamford, Stonington (Borough and Town), Stratford, Waterford, West Haven, Westbrook and Westport.

If "yes", and this registration is for a new authorization or a modification of an existing authorization where the physical footprint of the subject activity is modified, you must provide documentation to the DEEP Office of Long Island Sound Programs or the local governing authority has issued a coastal site plan approval or determined the project is exempt from coastal site plan review. Provide this documentation with your registration as Attachment B. See guidance in Appendix D of the general permit. Information on the coastal boundary is available at the local town hall or on the [Connecticut Coastal Resources Map](#) . Additional DEEP Maps and Publications are available by contacting DEEP Staff at 860-424-3555.

6. **ENDANGERED OR THREATENED SPECIES**:

In order to be eligible to register for this General permit, each registrant must either perform a self-assessment, obtain a limited one-year determination, or obtain a safe-harbor determination regarding threatened and endangered species. This may include the need to develop and implement a mitigation plan. While each alternative has different limitations, the alternatives are not mutually exclusive; a registrant may register for this General Permit using more than one alternative, See Appendix A of the general Permit. Each registrant must complete this AND Attachment C to this Registration form and a registrant who does not or cannot do so is not eligible to register under this General Permit.

Each registration must perform a review of the Department's Natural Diversity Database maps to determine if the site of the construction activity is located within or in proximity (within ¼ mile) to a shaded area.

- a. Provide the date of the NDDDB maps were reviewed: 26 Sep 2016 (Print a copy of the NDDDB map you viewed since it must be submitted with this registration as part of Attachment C.)

- b. For a registrant using a limited one-year determination or safe harbor determination to register for this General Permit, provide the Department's Wildlife Division NDDB identification number for any such determination:

_____ (The number is on the determination issued by the Department's Wildlife Division).

For more information on threatened and endangered species requirements, refer to Appendix A and section 3(b)(2) of this General Permit, Visit the DEEP website at [Natural Diversity Data Base](#) or call the NDDB at 860-424-3011.

- c. I verify that I have completed Attachment C to this Registration Form. ☐ Yes

7. **WILD AND SCENIC RIVERS:** Is the proposed project within the watershed of a designated

Wild and Scenic River? (See Appendix H for guidance) ☐ Yes ☒ No

8. **AQUIFER PROTECTION AREAS:** Is the site located within a mapped

[Aquifer Protection Area](#) , as defined in Section 22a-354h of the CT General Statutes?

(For additional guidance, please refer to Appendix C of the General Permit) ☐ Yes ☒ No

9. **Connecticut Guidelines for Soil Erosion and Sediment Control Guidelines:** Is the activity in accordance with Connecticut Guidelines for Soil Erosion and Sediment Control Guidelines and local erosion & sediment control ordinances, where applicable? ☒ Yes ☐ No

10. HISTORIC AND/OR ARCHAEOLOGICAL RESOURCES:

Has the site of the proposed activity been reviewed (using the process outlined in Appendix G of this permit) for historic and/or archaeological resources? ☒ Yes ☐ No

- a. The review indicates the proposed site does not have the potential for historic/ archaeological resources, OR ☒ Yes ☐ No

- b. The review indicated historic and/ or archaeological resource potential exists and the proposed activity is being or has been reviewed by the Offices of Culture and Tourism, OR ☐ NA ☐ Yes ☒ No

- c. The proposed activity has been reviewed and authorized under an Army Corps of Engineers Section 404 wetland permit. ☐ NA ☐ Yes ☒ No

11. CONSERVATION OR PRESERVATION RESTRICTION:

Is the property subject to a conservation or preservation restriction? ☐ Yes ☒ No

If Yes, proof of written notice of this registration to the holder of such restriction or a letter from the holder of such restriction verifying this registration is in compliance with the terms of the restriction, must be submitted as Attachment D.

Part V: Stormwater Discharge Information

Table 1

Outfall #	a) Type	b) Pipe Material	c) Pipe Size	d) Note: To find lat/long, go to: CT ECHO . A decimal format is required here. Directions on how to use CT ECHO to find lat./long. and conversions can be found in in Part V, section d of the DEEP-WPED-INST-015 .		e) What method was used to obtain your latitude/longitude information?
EO-1	Pipe	Metal	15"	-72.838274	41.401968	ezFile Portal Map
EO-2	Pipe	Metal	15"	-72.838274	41.401968	ezFile Portal Map
TO-1	Swale			-72.837266	41.403191	ezFile Portal Map

Part V: Stormwater Discharge Information Continued

Table 2

2. Provide the following information about the receiving water(s)/wetland(s) that receive stormwater runoff from your site, either directly or through the storm sewer system:									
Outfall #	Dates when this outfall will be active:	a) To what system or receiving water does your stormwater runoff discharge? either "storm sewer or wetlands" or "waterbody" (If you select storm sewer or wetlands, columns c.1&2 of this table are not required to be completed)	b) What is your watershed ID (freshwater) or 305b ID (estuary)? (Section 3.b, DEP-GP-INST-015 explains how to find this information)	c.1) Is your receiving water identified as an impaired water in the "Impaired Waters Table for Construction Stormwater Discharges" ?	If you answered yes to question c.1, then answer the question below		For the drainage area associated with each outfall: Effective Impervious Area Before Construction (sq ft)	For the drainage area associated with each outfall: Effective Impervious Area After Construction (sq ft)	
					c.2) Has any Total Maximum Daily Load (TMDL) been approved for your receiving waterbody?				
EO-1	Start: 3 Apr 2017 End:	Storm Sewer or Wetlands		<input type="checkbox"/> Y <input type="checkbox"/> N <input checked="" type="checkbox"/> NA	<input type="checkbox"/> Y <input type="checkbox"/> N <input checked="" type="checkbox"/> NA		27104	27104	
EO-2	Start: 3 Apr 2017 End:	Storm Sewer or Wetlands		<input type="checkbox"/> Y <input type="checkbox"/> N <input checked="" type="checkbox"/> NA	<input type="checkbox"/> Y <input type="checkbox"/> N <input checked="" type="checkbox"/> NA		33127	33127	
TO-1	Start: 3 Apr 2017 End: 27 Oct 2017	Storm Sewer or Wetlands		<input type="checkbox"/> Y <input type="checkbox"/> N <input checked="" type="checkbox"/> NA	<input type="checkbox"/> Y <input type="checkbox"/> N <input checked="" type="checkbox"/> NA		88744	88744	
	Start: End:	Select One		<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> NA	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> NA				
	Start: End:	Select One		<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> NA	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> NA				
Provide the total effective impervious area for the entire site(sq ft):								148975	148975

Part V: Stormwater Discharge Information (continued)

Impaired waters: If you answered "yes" to Table 2, question 2.c.1, **verify** that the project's Pollution Control Plan (Plan) addresses the control measures below in Question 1 or 2, as appropriate.

1. **If the impaired water does not have a TMDL**, confirm compliance by selecting 1.a. or 2.b. below:

a. No more than 3 acres is disturbed at any time; ☐ Yes

OR

b. Stormwater runoff from a 2 yr, 24 rain event is **retained**. ☐ Yes

2. **If the impaired water has a TMDL**, confirm compliance by selecting 2.a. and 2.b. below and either question 2.c.1. or 2.c.2. below:

a. The Plan documents there is sufficient remaining Waste Load Allocations (WLA) in the TMDL for the proposed discharge, ☐ Yes

AND

b. Control measures shall be implemented to assure the WLA will not be exceeded, ☐ Yes

AND

c. 1. Stormwater discharges will be monitored for the indicator pollutant identified in the TMDL, ☐ Yes

OR

2. The Plan documents specific requirements for stormwater discharges specified in the TMDL. ☐ Yes

Part VI: Pollution Control Plan Availability (check one of the following four categories)

- ☒ I am registering a Locally Exempt project and submitting the required electronic Plan (in AdobeTM PDF or similarly publically available format) pursuant to Section 3(c)(2)(E) of this permit.
- ☒ Plan is attached to this registration form
- ☐ Plan is available at the following Internet Address (URL): _____
- ☐ I am registering a Locally Approvable project and have chosen not to submit the Plan with this registration pursuant to Section 3(c)(1) of this permit.
- ☐ I am registering a Locally Approvable project and have chosen to make my Plan electronically available pursuant to Section 4(c)(2)(N) of this permit.
- ☐ Plan is attached to this registration form
- ☐ Plan is available at the following Internet Address (URL): _____
- ☐ I am registering a Locally exempt project and do not have the capability to submit the Plan electronically. Therefore, I am submitting a paper copy with this registration as Attachment E.

Part VII: Registrant Certification

The registrant *and* the individual(s) responsible for actually preparing the registration must sign this part. A registration will be considered incomplete unless all required signatures are provided.

For New Registrants:

"I hereby certify that I am making this certification in connection with a registration under such general permit, submitted to the commissioner by E OF CONNECTICUT DEPARTMENT OF TRANSPORTA for an activity located at 171 Bassett Rd, North Haven Town of, CT 06473 and that all terms and conditions of the general permit are being met for all discharges which have been initiated and such activity is eligible for authorization under such permit. I further certify that a system is in place to ensure that all terms and conditions of this general permit will continue to be met for all discharges authorized by this general permit at the site. I certify that the registration filed pursuant to this general permit is on complete and accurate forms as prescribed by the commissioner without alteration of their text. I certify that I have personally examined and am familiar with the information that provides the basis for this certification, including but not limited to all information described in Section 3(b)(8)(A) of such general permit, and I certify, based on reasonable investigation, including my inquiry of those individuals responsible for obtaining such information, that the information upon which this certification is based is true, accurate and complete to the best of my knowledge and belief. I certify that I have made an affirmative determination in accordance with Section 3(b) (8) (B) of this general permit. I understand that the registration filed in connection with such general permit is submitted in accordance with and shall comply with the requirements of Section 22a-430b of Connecticut General Statutes, as amended by Public Act 12-172. I also understand that knowingly making any false statement made in the submitted information and in this certification may be punishable as a criminal offense, including the possibility of fine and imprisonment, under Section 53a-157b of the Connecticut General Statutes and any other applicable law."

For Re-registrants:

"I hereby certify that I am making this certification in connection with a registration under the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities, submitted to the commissioner by _____ for an activity located at _____

and that all terms and conditions of the general permit are being met for all discharges which have been initiated and such activity is eligible for authorization under such permit. I further certify that all designs and plans for such activity meet the current terms and conditions of the general permit in accordance with Section 5(b)(5)(C) of such general permit and that a system is in place to ensure that all terms and conditions of this general permit will continue to be met for all discharges authorized by this general permit at the site. I verify that the registration filed pursuant to this general permit is on complete and accurate forms as prescribed by the commissioner without alteration of their text. I certify that I have personally examined and am familiar with the information that provides the basis for this certification, including but not limited to all information described in Section 3(b)(8)(A) of such general permit, and I certify, based on reasonable investigation, including my inquiry of those individuals responsible for obtaining such information, that the information upon which this verification is based is true, accurate and complete to the best of my knowledge and belief. I also understand that knowingly making any false statement made in the submitted information and in this certification may be punishable as a criminal offense, including the possibility of fine and imprisonment, under Section 53a-157b of the Connecticut General Statutes and an other applicable law."

_____	_____
Signature of Registrant	
Domenic LaRosa	District III Engineer
Name of Registrant (print or type)	Title (if applicable)
_____	_____
Signature of Preparer and Date (if different than above)	
CHARLES EATON	_____
Name of Preparer (print or type)	Title (if applicable)

Part VIII: Professional Engineer (or Landscape Architect, where appropriate) Design Certification (for publically approvable and exempt projects)

The following certification must be signed by a Professional Engineer, or Landscape Architect where appropriate.

<p>"I hereby certify that I am a _____ licensed in the State of Connecticut. I am making this certification in connection with a registration under such general permit, submitted to the commissioner by <u>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</u> for an activity located at <u>171 Bassett Rd, North Haven Town of, CT 06473</u> . I certify that I have thoroughly and completely reviewed the Stormwater Pollution Control Plan for the project or activity covered by this certification. I further certify, based on such review and on the standard of care for such projects, that the Stormwater Pollution Control Plan has been prepared in accordance with the Connecticut Guidelines for Soil Erosion and Sediment Control, as amended, the Stormwater Quality Manual, as amended, and the conditions of the general permit, and that the controls required for such Plan are appropriate for the site. I further certify, based on reasonable investigation, including my inquiry of those individuals responsible for obtaining such information, that the information upon which this certification is based is true, accurate and complete to the best of my knowledge and belief. I also understand that knowingly making any false statement in this certification may subject me to sanction by the Department and/or be punishable as a criminal offense, including the possibility of fine and imprisonment, under Section 53a-157b of the Connecticut General Statutes and any other applicable law."</p>	
<p>_____</p>	
<p>Signature of Design Professional and Date</p>	
<p><u>CHARLES EATON</u></p>	<p><u>22337</u></p>
<p>Name of Professional (print or type)</p>	<p>License Number</p>
<p>Affix P.E./L.A Stamp Here</p>	

Part IX: Reviewing Qualified Professional Certification

The following certification must be signed by a) a Conservation District reviewer OR, b) a qualified soil erosion and sediment control and/ or professional engineer

<input type="checkbox"/> Review Certification by Conservation District:	
1.) District: _____	
Date of Affirmative Determination: _____	
“ I am making this certification in connection with a registration under General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities, submitted to the commissioner by _____ for an activity located at _____.	
I have personally examined and am familiar with the information that provides the basis for this certification, and I affirm, based on the review described in Section 3(b)(11)(C) of this general permit and on the standard of care for such projects, that the Stormwater Pollution Control Plan is adequate to assure that the activity authorized under this general permit will comply with the terms and conditions of such general permit and that all stormwater management systems: (i) have been designed to control pollution to the maximum extent achievable using measures that are technologically available and economically practicable and that conform to those in the Guidelines and the Stormwater Quality Manual; (ii) will function properly as designed; (iii) are adequate to ensure compliance with the terms and conditions of this general permit; and (iv) will protect the waters of the state from pollution.”	
_____ Signature of District Professional and Date	
_____ Name of District Professional	_____ License Number (if applicable)
Or	
<input type="checkbox"/> Review Certification by Qualified Professional:	
Company Name: _____	
Name: _____	
License #: _____	
Level of independency of professional:	
Required for all projects disturbing over 1 acre:	
1. I verify I am not an employee of the registrant.	<input type="checkbox"/> Yes
2. I verify I have no ownership interest of any kind in the project for which the registration is being submitted.	<input type="checkbox"/> Yes
Required for projects with 15 or more acres of site disturbance (in addition to questions 1&2):	
3. I verify I did not engage in any activities associated with the preparation, planning, designing or engineering of the soil erosion and sediment control plan or stormwater management systems plan for this registrant.	<input type="checkbox"/> Yes
4. I verify I am not under the same employ as any person associated with the preparation, planning, designing or engineering of the soil erosion and sediment control plan or stormwater management systems plan for this registrant.	<input type="checkbox"/> Yes

Part IX: Reviewing Qualified Professional Certification (continued)

"I hereby certify that I am a qualified professional engineer or qualified soil erosion and sediment control professional, or both, as defined in the General Permit for Discharge of Stormwater and Dewatering Wastewaters from Construction Activities and as further specified in Sections 3(b)(11)(A) and (B) of such general permit. I am making this certification in connection with a registration under such general permit, submitted to the commissioner by _____ for an activity located at _____.

I have personally examined and am familiar with the information that provides the basis for this certification, including but not limited to all information described in Section 3(b)(11)(C) of such general permit, and I certify, based on reasonable investigation, including my inquiry of those individuals responsible for obtaining such information, that the information upon which this certification is based is true, accurate and complete to the best of my knowledge and belief. I certify, based on my review of all information described in Section 3(b)(11)(C) of such general permit and on the standard of care for such projects, that I have made an affirmative determination in accordance with Sections 3(b)(11)(D)(i) and (ii) of this general permit. I understand that this certification is part of a registration submitted in accordance with Section 22a-430b of Connecticut General Statutes, as amended by Public Act 12-172, and is subject to the requirements and responsibilities for a qualified professional in such statute. I also understand that knowingly making any false statement in this certification may be punishable as a criminal offense, including the possibility of fine and imprisonment, under Section 53a-157b of the Connecticut General Statutes and any other applicable law."

Signature of Reviewing Qualified Professional

Name of Reviewing Qualified Professional

License No.

Affix P.E./ L.A. Stamp Here

Note: Please submit the fee along with a completed, printed and signed Registration Form and all additional supporting documents to:

**CENTRAL PERMIT PROCESSING UNIT
DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION
79 ELM STREET
HARTFORD, CT 06106-5127**

STORMWATER POLLUTION CONTROL PLAN

Replacement of Bridge 03120 Bassett Road over I-91 North Haven, CT

State Project No.: 100-178

Connecticut Department of Transportation

August 8, 2016

This Stormwater Pollution Control Plan (SWPCP) is prepared to comply with the requirements for the General Permit for Stormwater Discharges (GPSD) from Construction Activities. Also to be considered part of the SWPCP are the proposed construction plans, special provisions, and the Connecticut Department of Transportation's "Standard Specifications for Roads, Bridges and Incidental Construction" (Form 816), including supplements thereto, and the 2002 *Connecticut Guidelines for Soil Erosion and Sediment Control* and 2004 *Stormwater Quality Manual*.

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1. Site Description

Site Description

This project consists of the construction of Replacement Bridge 03120 on Bassett Road over I-91 in the urban area of North Haven.

The purpose of this project is to replace bridge 03120.

Site work includes bridge replacement.

Estimated Disturbed Area

The total area for this project site is 7.61 acres. Of this area, 3.84 acres will be disturbed by construction activities.

Estimated Runoff Coefficient

The runoff coefficient assumed for pavement (3.42 acres) is 0.9. For the pervious areas (4.19 acres), a coefficient of 0.3 was assumed.

$$\begin{array}{l} \text{Pre/Post-Construction} \\ \frac{(4.19 \text{ ac.} \times 0.3) + (3.42 \text{ ac.} \times 0.9)}{4.19 \text{ ac.} + 3.42 \text{ ac.}} = 0.57 \end{array}$$

The estimated runoff coefficients, with the corresponding contributing areas, are shown on Figures A-2.

Receiving Waters

The receiving waterbody are the wetlands in the median of I-91, which drain through swales, wetlands, and a series of pipes before finally draining to the Quinnipiac River. The flow path is approximately 1.5 miles from the site to the Quinnipiac River.

Extent of Wetlands On-Site

1,438 square feet of wetlands are on the site. No wetlands will be disturbed as part of the project. There are no regulated floodplain areas on this project.

2. Construction Sequencing

The Contractor will be given approximately April 1, 2017 to October 31, 2017 for the construction of all phases of the project.

The suggested sequence of construction is as follows:

1. Conduct a preconstruction meeting.
2. Install erosion controls at the effected inlets and at limits of disturbed slopes.
3. Perform clearing and grubbing activities.
4. Establish temporary detour and close Bassett Road.
5. Install the anti-tracking pads and concrete washout areas.
6. Prepare staging area at the median.
7. Demolish the existing bridge. Contractor is required to submit the detailed work outlining the demolition.
8. Construct the GRS-IBS common abutment at median.
9. Construct the GRS-IBS North and South abutment.
10. Install Span 1 PBU's.
11. Install Span 2 PBU's.
12. Construct backwall and install moment slabs in common abutment.
13. Install concrete sidewalks and curbing.
14. Construct roadway and finish bridge deck as indicated.
15. Grade grass slopes and immediately stabilize. Establish turf, per plan, on all remaining disturbed areas.
16. Remove erosion controls once all disturbed areas have been stabilized as determined by the Engineer.
17. Clean all post-construction stormwater structures of construction sediment, and remove any remaining silt fence prior to filing of the "Notice of Termination Form".
18. Perform project cleanup.

If the construction sequencing activities create an area of disturbance between two (2) acres and five (5) acres per discharge point, the Contractor must submit to the Engineer a revised SWPCP for review and approval. The SWPCP must include locations of the temporary sedimentation trap per discharge point with a capacity to contain 134 cubic yards per acre of material in accordance with the *2002 Guidelines*. The Contractor shall provide an inspection and maintenance plan for the temporary sedimentation trap as part of the amended SWPCP.

3. Control Measures

Erosion and Sedimentation (E&S) Controls

CTDOT will have construction inspection personnel assigned to the project in order to oversee the Contractor's operations to ensure compliance with the provisions of the Standard Specifications. Further CTDOT oversight is provided by the District 3 Environmental Coordinator and the Office of Environmental Planning.

The following timelines will be followed for the proposed construction activities:

- If construction activities are complete or have been temporarily halted for more than seven (7) days, stabilization activities will be implemented within three (3) days. *(See chapter 5 of the 2002 E & S Guidelines)*
- Areas that remain disturbed but inactive for at least 30 days shall receive temporary seeding or soil protection within seven (7) days.
- Disturbed areas that do not establish a vegetative cover within 30 days of seeding shall have erosion control blankets installed. Prior to the erosion control blanket installation, the soil would be prepared with the application of lime, fertilizer, and seed.
- Areas that will be disturbed past the planting season will be covered with a long-term, non-vegetative stabilization method that will provide protection through the winter.
- Stabilization practices will be implemented as quickly as possible in accordance with the Guidelines.
- The Contractor shall stabilize disturbed areas with temporary or permanent measures as quickly as possible after the land is disturbed. Requirements for soil stabilization are detailed in Form 816 Section 1.10.03, Best Management Practices.

Temporary Stabilization Practices

The following methods of temporary stabilization shall be used:

- Erosion Control Matting: On slopes steeper than 3:1, erosion control matting shall be used to stabilize the topsoil.
- Silt Fence: Silt fence shall be placed at the base of embankments.
- Anti-Tracking Pads: Construction entrances (gravel anti-tracking pads) shall be

constructed at truck access points to off-road route.

- Dust Control: Routine sweeping and application of dust suppression agents, including water and calcium chloride, over exposed sub base shall be completed for dust control.
- Catch Basin Inlet Protection: Catch basin inlet protection shall be used to reduce the amount of sediment entering the storm drainage system during construction.

Stabilization practices shall be implemented no more than three days after completion, as final grades are reached, or if work has been suspended for more than seven days.

Temporary seeding shall be spread over any disturbed areas which will remain inactive for at least 30 days. Areas to remain disturbed through winter shall be protected with non-vegetative stabilization measures. The Contractor must provide an E&S Control plan for each winter season during construction operations.

The Contractor may use other controls in the project, as necessary, if they conform to the *2002 Connecticut Guidelines for Erosion and Sediment Control* and are approved by the Engineer. The Contractor will be required to provide the necessary details for any erosion controls not specifically called for on the project plans.

During construction, all areas disturbed by the construction activity that have not been stabilized, all E&S control measures, all structural control measures, soil stockpile areas, washout areas and locations where vehicles enter or exit the site shall be inspected for evidence of, or the potential for, pollutants entering the drainage system and impacts to receiving waters at least once every seven calendar days and within 24 hours of the end of a storm that generates a discharge.

For storms that end on a weekend, holiday or other time in which working hours will not commence within 24 hours, an inspection is required within 24 hours only for storms that equal or exceed 0.5 inches. For lesser storms, inspection shall occur immediately upon the start of subsequent normal working hours.

Permanent Stabilization Practices

During construction, the following methods of permanent stabilization shall be installed:

- Permanent Seeding: Once soils have been brought to final grade, permanent seeding shall be used to stabilize the soil with a vegetative cover.
- Topsoiling: In conjunction with permanent seeding, once final grades have been established, topsoil shall be applied to provide a suitable growth medium for vegetation.
- Crushed Stone: Once final grades have been established, crushed stone shall be applied to locations shown on the plan to provide a stable soil cover.

All new embankments disturbed by construction and unpaved areas that are graded or disturbed by construction will receive erosion control matting, topsoil and/or turf establishment. The Contractor may use other permanent stabilization practices approved by the Engineer and conforming to the *2002 Connecticut Guidelines for Soil Erosion and Sediment Control*.

Structural Measures

The existing 15" CMPs have riprap outlet protection as shown on the plans to decrease velocity and erosion.

The following structural measures shall be used to divert flows, limit runoff, and minimize the discharge of pollutants:

- Outlet Protection: Riprap outlet protection shall be used at the proposed outlets to decrease velocity and the potential for erosion.

Maintenance

All construction activities and related activities shall conform to the requirements of Section 1.10 "Environmental Compliance" of CTDOT's Standard Specifications, Form 816. In general, all construction activities shall proceed in such a manner so as not to pollute any wetlands, watercourses, waterbodies, and conduits carrying stormwater. The Contractor shall limit, in so far as possible, the surface area of earthen materials exposed by construction activity and immediately provide temporary and permanent pollution control to prevent soil erosion and contamination on the site. Water pollution control provisions and best management practices per Section 1.10.03 of the Standard Specifications shall be administered during construction. Control measures shall be inspected and maintained in accordance with the *2002 Guidelines* and as directed by the Engineer.

4. Dewatering Wastewaters

Dewatering Guidelines

If encountered, dewatering wastewaters will be infiltrated into the ground unless otherwise directed by the Engineer. When dewatering is necessary, pumps used shall not be allowed to discharge directly into a wetland or watercourse. Prior to any dewatering, the Contractor must submit to the Engineer a written proposal for specific methods and devices to be used and obtain the Engineer's written approval of such methods and devices, including, but not limited to, the

pumping of water into a temporary sedimentation basin, providing surge protection at the inlet or outlet of pumps, floating the intake of a pump, or any other method for minimizing and retaining the suspended solids. If the Engineer determines that a pumping operation is causing turbidity problems, the Contractor shall halt said operation until a means of controlling the turbidity is submitted by the Contractor in writing to the Engineer, approved in writing by the Engineer and implemented by the Contractor. No discharge of dewatering wastewater shall contain or cause a visible oil sheen, floating solids or foaming in the receiving water. If required, all activities are to be performed in compliance with CTDOT Form 816.

5. Post-Construction Stormwater Management

Post-Construction Guidelines

After the project is complete, the Department will perform the following maintenance and restorative measures:

- Litter/debris will be removed from the site regularly.
- Mowing and maintenance of the turf areas and vegetated areas will occur as needed.
- Riprap outlet protection will be inspected and repaired annually or as needed.
- The stormwater basin will be inspected and repaired annually or as needed. Sediment will be removed when it interferes with the detention capacity of the basin. Outlets will be checked for excessive scour and repaired as needed.

Post-Construction Performance Standards and Control Measures

Redevelopment

This project has 45% impervious cover; however, the impervious cover does not change from preconstruction to post construction.

$(3.42 \text{ acres impervious} / 7.61 \text{ acres total area}) \times 100\% = 45\%$

Runoff Reduction and LID Practices

This project consists of the construction of Replacement Bridge 03120 on Bassett Road over I-91 in North Haven. Stormwater runoff and the runoff coefficients will not change from existing to proposed conditions. The project area required for construction of the project results in greater than 1 acre of ground disturbance; however, these areas are a temporary disturbance and will be restored to original grading with loam and seed. The runoff coefficients will not increase. There are no changes to stormwater practices. There is outlet protection at the existing 15" CMP

outlets. The outlet protection will reduce velocity from the existing 15" CMPs. The overall project will not increase runoff.

The ability to add LID practices to this bridge replacement project are limited due to the steep 1.5:1 grades in the shoulder of Bassett Road. The median of I-91 will be used as a lay-down area for the contractor. This area will be restored to its original condition with loam and seed. The area incorporates vegetated swales with non-curbed sheet flow runoff from I-91. Acquiring right-of-way is not planned with this bridge replacement project, so there is no space for additional LID practices with this project.

Suspended Solids and Floatables Removal

No changes to stormwater practices are proposed for this project. The median of I-91 will be used as a lay-down area for the contractor. This area will be restored to its original condition with loam and seed. The area incorporates vegetated swales with non-curbed sheet flow runoff from I-91.

Velocity Dissipation

Outlet protection is present at the existing 15" CMP outlets from the Bassett Road 03120 Bridge. See Appendix B for Drainage calculations.

6. Other Controls

Waste Disposal

Construction site waste shall be properly managed and disposed of during the entire construction period. Additionally:

- A waste collection area will be designated. The selected area will minimize truck travel through the site and will not drain directly to the adjacent wetlands.
- Waste collection shall be scheduled regularly to prevent the containers from overfilling.
- Spills shall be cleaned-up immediately.
- Defective containers that may cause leaks or spills will be identified through regular inspection. Any found to be defective will be repaired or replaced immediately.
- Any stockpiling of materials should be confined to the designated area as defined by the Engineer.

Washout Areas

Washout of applicators, containers, vehicles and equipment for concrete shall be conducted in a

designated washout area. No surface discharge of washout wastewaters from the area will be allowed. All concrete washwater will be directed into a container or pit such that no overflows can occur. Washout shall be conducted in an entirely self-contained system and will be clearly designed and flagged or signed where necessary. The washout area shall be located outside of any buffers and at least 50 feet from any stream, wetland or other sensitive water or natural resources as determined or designated by Engineer or CTDOT Office of Environmental Planning.

The designated area shall be designed and maintained such that no overflows can occur during rainfall or after snowmelt. Containers or pits shall be inspected at least once a week to ensure structural integrity, adequate holding capacity and will be repaired prior to future use if leaks are present. The Contractor shall remove hardened concrete waste when it accumulates to a height of ½ of the container or pit or as necessary to avoid overflow. All concrete waste shall be disposed of in a manner consistent with all applicable laws, regulations and guidelines.

Anti-Tracking Pads and Dust Control

Off-site vehicle tracking of sediments and the generation of dust shall be minimized. Temporary anti-tracking pads from the active work site to the existing pavement will be installed and maintained at the locations shown on the plans. The Contractor shall:

- Maintain the entrance in a condition which will prevent tracking and washing of sediment onto paved surfaces.
- Provide periodic top dressing with additional stone or additional length as conditions demand.
- Repair any measures used to trap sediment, as needed.
- Immediately remove all sediment spilled, dropped, washed or tracked onto paved surfaces.
- Ensure that roads adjacent to a construction site are left clean at the end of each day.

If the construction entrance is being properly maintained and the action of a vehicle traveling over the stone pad is not sufficient to remove the majority of the sediment, then the Contractor shall either:

- Increase the length of the construction entrance,
- Modify the construction access road surface, or
- Install washing racks and associated settling area or similar devices before the vehicle enters a paved surface.

For construction activities which cause airborne particulates, wet dust suppression shall be utilized. Construction site dust will be controlled by sprinkling the ground surface with water until it is moist on an as-needed basis. The volume of water sprayed shall be such that it suppresses dust yet also prevents the runoff of water.

Post-Construction

Upon completion of construction activities and stabilization of the site, all post-construction stormwater structures, including outlet protection for the existing 15" CMPs, shall be cleaned of construction sediment, and any remaining silt fence shall be removed prior to acceptance of the project by CTDOT. Sediment shall be properly disposed of in accordance with all applicable laws, regulations and guidelines.

Maintaining and Storing Vehicles and Equipment

The Contractor shall take measures to prevent any contamination to wetlands and watercourses while maintaining and storing construction equipment on the site. All chemical and petroleum containers stored on-site shall be provided with impermeable containment which will hold at least 110% of the volume of the largest container, or 10% of the total volume of all containers in the area, whichever is larger, without overflow from the containment area. All chemicals and their containers shall be stored under a roofed area except for those stored in containers of 100 gallon capacity or more, in which case double-walled tanks will suffice.

7. Inspections

Inspection Guidelines

All construction activities shall be inspected initially for Plan implementation and then weekly for Routine Inspections.

During construction, all areas disturbed by the construction activity that have not been stabilized, all E&S control measures, all structural control measures, soil stockpile areas, washout areas and locations where vehicles enter or exit the site shall be inspected for evidence of, or the potential for, pollutants entering the drainage system and impacts to receiving waters at least once every seven calendar days and within 24 hours of the end of a storm that generates a discharge.

For storms that end on a weekend, holiday or other time in which working hours will not commence within 24 hours, an inspection is required within 24 hours only for storms that equal or exceed 0.5 inches. For lesser storms, inspection shall occur immediately upon the start of subsequent normal working hours.

Where sites have been temporarily or finally stabilized, such inspection shall be conducted at least once every month for three months.

Qualified personnel provided by the DOT District 3 Office shall conduct Inspections.

The following items shall be inspected as described below:

<u>Item</u>	<u>Procedure</u>
Silt Fence/Hay Bales	Silt fence shall be inspected to ensure that the fence line is intact with no breaks or tears. Fence and hay bales shall be firmly anchored to the ground. Areas where the fence is excessively sagging or where support posts are broken or uprooted shall be noted. Depth of sediment behind the fence and hay bales shall be noted. Hay bales shall be inspected to ensure they have not clogged.
Catch Basin Protection	Protective measures shall be inspected to ensure that sediment is not entering the catch basins. Catch basin sumps shall be monitored for sediment deposition.
Vehicle Entrances / Exits	Locations where vehicles enter or exit the site shall be inspected for evidence of off-site tracking.
General	Construction areas and the perimeter of the site shall be inspected for any evidence of debris that may blow or wash off-site or that has blown or washed off-site. Construction areas shall be inspected for any spills or unsafe storage of materials that could pollute off-site waters.

8. Keeping Plans Current

Revisions to Stormwater Pollution Control Plans

CTDOT shall amend the Plan if the actions required by the Plan fail to prevent pollution or otherwise comply with provisions of the General Permit. The Plan shall also be amended whenever there is a change in Contractors or Subcontractors at the site. If the results of the inspections require modifications to the Stormwater Pollution Control Plan, the plans shall be revised as soon as practicable after the inspection. Such modifications shall provide for a timely implementation of any changes to non-engineered controls on the site within 24 hours and implementation of any changes to the plan within 3 (three) calendar days following the inspection. For engineered measures, corrective actions shall be implemented on-site within 7 (seven) days and incorporated into a revised Plan within 10 (ten) days of the date of inspection

In no event shall the requirements to keep the Plan current or update a Plan, relieve the permittee

and their contactor(s) of the responsibility to properly implement any actions required to protect the waters of the State and to comply with all conditions of the permit.

9. Monitoring Requirements

A written report summarizing the scope of the inspection, the name(s) and qualifications of inspection personnel, the date and time of the inspection, major observations relative to the implementation of the Pollution Control Plan, and actions taken shall be completed within 24 hours of the inspection. This report shall be retained as part of the Stormwater Pollution Control Plan for at least five years after the date of the inspection.

Turbidity monitoring shall be conducted at the 3 locations depicted on the Plan utilizing a procedure consistent with 40 CFR Part 136 (http://www.epa.gov/region9/qa/pdfs/40cfr136_03.pdf) and may be taken manually or by an in-situ turbidity probe or other automatic sampling device equipped to take individual turbidity readings. The first sample shall be taken within the first hour of stormwater discharge from the site and at least three grab samples shall be taken during a storm event and shall be representative of the flow and characteristics of the discharge. Sampling shall be conducted monthly when there is a discharge of stormwater from the site while construction activity is ongoing, until final stabilization of the drainage area associated with each outfall is achieved.

Samples shall be taken during normal working hours, which for this project, shall be defined as Monday through Friday, 8 am to 4 pm. If a storm continues past working hours, sampling shall resume the following morning or the morning of the next working day following a weekend or holiday, as long as the discharge continues. Sampling may be temporarily suspended when conditions exist that may reasonably pose a threat to the safety of the person taking the sample.

Within 30 days following the end of each month, the stormwater sampling results shall be submitted on the Stormwater Monitoring Report (SMR) and in accordance with NetDMR. If there is no stormwater discharge during a month, sampling is not required; however, SMRs indicating “no discharge” shall still be submitted as required.

10. Contractors

General

This section shall identify all Contractors and Subcontractors who will perform on-site actions which may reasonably be expected to cause or have the potential to cause pollution of the waters of the State.

Certification Statement

All Contractors and Subcontractors must sign the attached statement. All certification will be included in the Stormwater Pollution Control Plan.

State Project No. 100-178

Replacement of Bridge 03120 Bassett Road over I-91
North Haven, CT

“I certify under penalty of law that I have read and understand the terms and conditions of the General Permit for the Discharge of Stormwater associated with construction activity. I understand that as Contractor on the project, I am covered by this general permit and must comply with the terms and conditions of this permit, including, but not limited to, the requirements of the Stormwater Pollution Control Plan prepared for this project.”

GENERAL CONTRACTOR

Signed: _____

Date: _____

Title: _____

Firm: _____

Telephone: _____

Address: _____

SUBCONTRACTOR

Signed: _____

Date: _____

Title: _____

Firm: _____

Telephone: _____

Address: _____

List of Applicable Figures and Forms

Appendix A – Project Location / Project Figures

Aerial Photo	Figures A-1.1, A-1.2
Pre and Post-Constructions AI Conditions	Figures A-2.1, A-2.2
Disturbed/Erodible Areas	Figures A-3.1, A-3.2

Appendix B – Drainage Calculations

Drainage Calculations for outlets at Sta. 11+49 20 ft. LT. and at Sta. 18+99 25 ft. LT.

Appendix C – Plan Sheets




Sedimentation and Erosion Control	HWY-04, STR-16
Site Plan	HWY-04, STR-16
Drainage and Utility Plan	HWY-04, STR-16, STR-02
Grading Plan	HWY-04, STR-16, STR-02
Civil Details	HWY-02, HWY-14

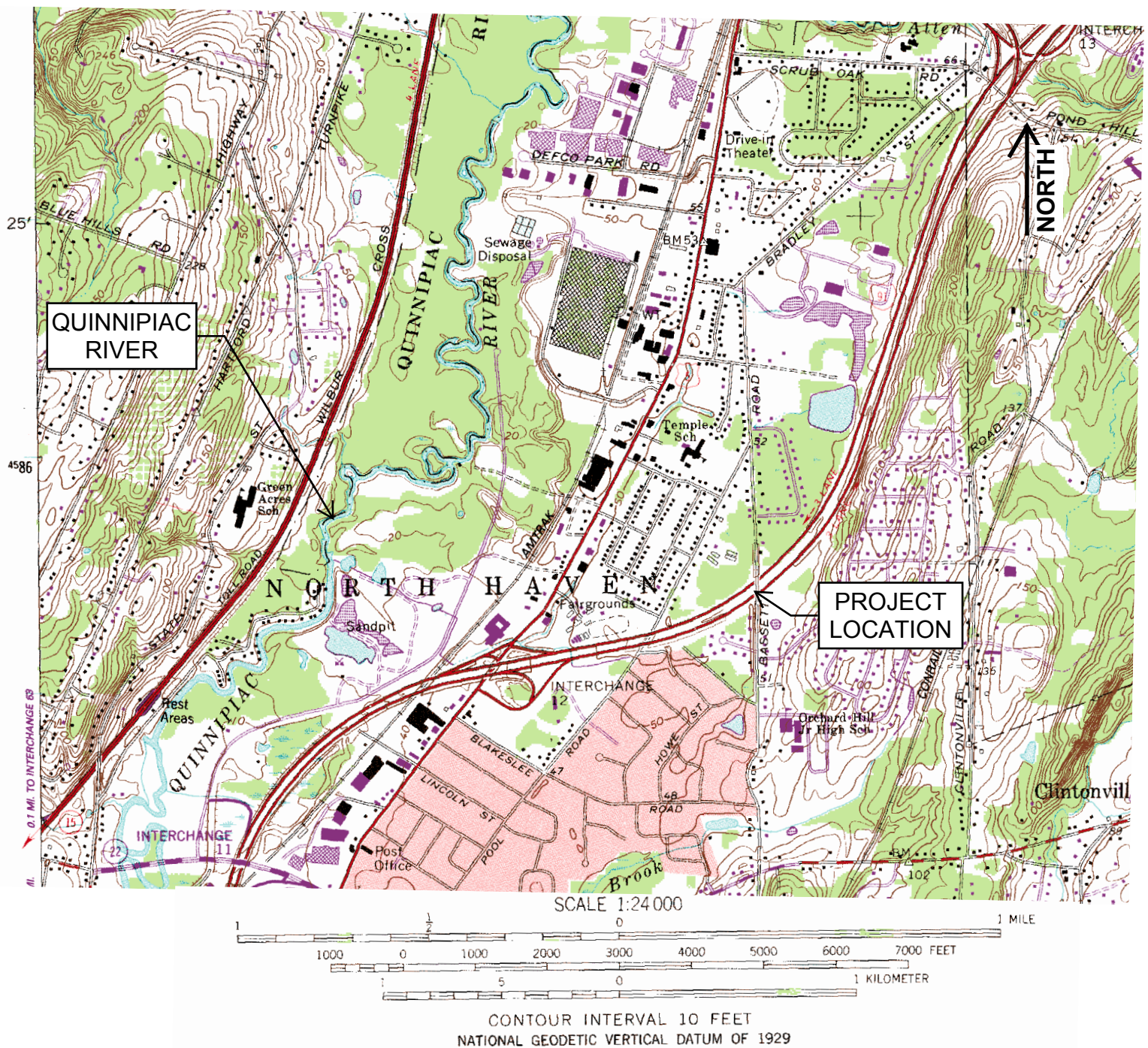
Appendix D – Stormwater Monitoring Report Form

Appendix E – Notice of Termination Form

Appendix A – Project Location/Project Figures



<p>STATE PROJECT NO.:</p> <p>100-178</p> <p>CITY/TOWN:</p> <p>NORTH HAVEN</p>	<div>  <div> <p>STATE OF CONNECTICUT</p> <p>DEPARTMENT OF TRANSPORTATION</p> </div>  </div> <p>55</p> <p>BRIDGE NO. 03120</p> <p>PROJECT LOCATION</p>	<div>  <div> <p>CME</p> <p><small>CME ASSOCIATES, INC.</small></p> <p><small>32 Crabtree Lane, Woodstock, CT 06091</small></p> <p><small>303 East River Drive, East Hartford, CT 06108</small></p> <p><small>50 Elm Street, Southbridge, MA 01550</small></p> <p><small>888-291-3227 www.cmeengineering.com</small></p> </div> </div> <p>DATE:</p> <p>08/2016</p> <p>SHEET NO.:</p> <p>FIGURE A-1.1</p>
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UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

WALLINGFORD, CONN.
41072-D7-TF-024

1967
PHOTOREVISED 1984
DMA 6466 IV NE-SERIES V816

STATE PROJECT NO.:

100-178

CITY/TOWN:

NORTH HAVEN



STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

56

BRIDGE NO. 03120
PROJECT LOCATION



CME ASSOCIATES, INC.
303 East River Drive, East Hartford, CT 06108
30 Elm Street, Southbridge, MA 01550
860-251-5257 | www.cmeengineering.com

DATE:

08/2016

SHEET NO.:

FIGURE A-1.2

*N/F
MARGARET
A. KEEFE*

N/F
PATRICK E.
SULLIVAN ET AL



SCALE: 1" = 40'

N/F
PATRICK E.
SULLIVAN ET AL

N/F
PATRICK E.
SULLIVAN ET AL

- N/F**
PATRICK E.
SULLIVAN ET AL

N/F
PATRICK E.
SULLIVAN ET AL

- N/F**
PATRICK E.
SULLIVAN ET AL

N/F
PATRICK E.
SULLIVAN ET AL

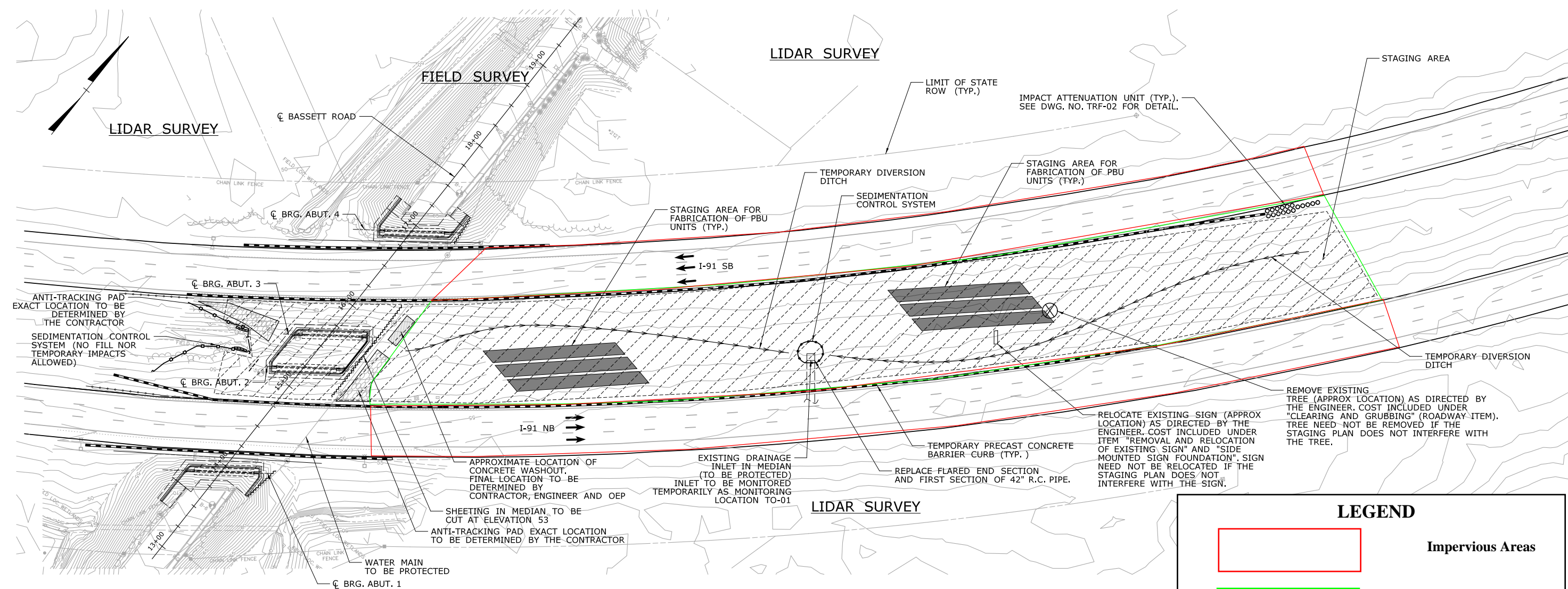
- N/F**
PATRICK E.
SULLIVAN ET AL

N/F
PATRICK E.
SULLIVAN ET AL



N/F
PATRICK E.
SULLIVAN ET AL

N/F
PATRICK E.
SULLIVAN ET AL

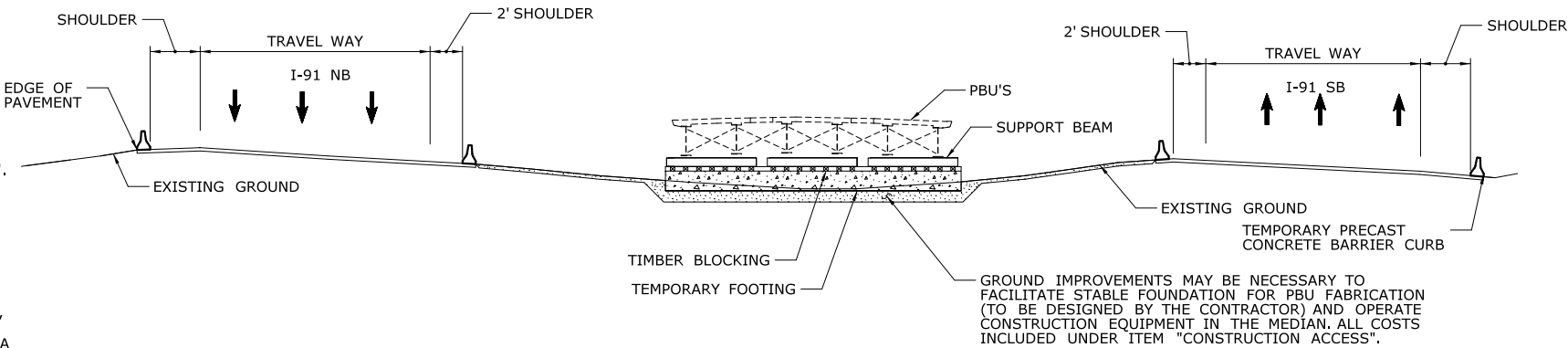


I-91 MEDIAN STAGING PLAN NOTES:

1. ALL SITE ACCESS PLANS SHOWN ON THE DRAWINGS ARE CONCEPTUAL. THE CONTRACTOR IS REQUIRED TO SUBMIT A DETAILED WORKING DRAWING SUBMISSION OUTLINING HIS SITE ACCESS PLAN IN ACCORDANCE WITH THE REQUIREMENTS OUTLINED IN THE SPECIAL PROVISION "CONSTRUCTION ACCESS".
2. THE CONCEPTUAL STAGING PLAN ASSUMES THAT THE PREFABRICATED BRIDGE UNITS WILL BE FABRICATED ON-SITE.
3. DURING ALL CONSTRUCTION WORK, THE CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO ENSURE THAT ALL WORK AT THE SITE ARE PERFORMED IN A SAFE MANNER.
4. ALL SITE WORK INCLUDING TRAFFIC INTO AND OUT OF THE SITE SHALL BE DONE IN ACCORDANCE WITH THE SPECIAL PROVISIONS "PROSECUTION AND PROGRESS", "LIMITATIONS OF OPERATIONS", "MAINTENANCE AND PROTECTION OF TRAFFIC" AND "CONSTRUCTION ACCESS".
5. THE CONTRACTOR SHALL CONSTRUCT AND MAINTAIN SAFE ZONES TO THE SITE FOR DELIVERIES INCLUDING INSTALLATION OF ANTI-TRACKING PADS. ALL PERTINENT INFORMATION SHALL BE SHOWN ON THE WORKING DRAWINGS SUBMISSION FOR "CONSTRUCTION ACCESS".
6. THE CONTRACTOR SHALL HAVE A PLAN TO MAINTAIN ADEQUATE DRAINAGE AT THE CONSTRUCTION SITE. DRAINAGE SHALL BE CHanneled AWAY FROM THE SITE TO AN UNUSED LOCATION OR CONNECTED TO EXISTING MEDIAN DRAINAGE. SHEET FLOW DRAINAGE FROM I-91 SHALL NOT BE IMPEDED AT ANY TIME.
7. FILLING IN OF WETLANDS OR OTHER WORK IN DESIGNATED WETLANDS WILL NOT BE ALLOWED.
8. ONCE ALL CONSTRUCTION WORK IS COMPLETE, THE CONTRACTOR SHALL RESTORE THE SITE TO ORIGINAL CONDITIONS. ALL COSTS TO DESIGN, ESTABLISH, MAINTAIN AND RESTORE THE I-91 MEDIAN STAGING SITE AREA INCLUDING GROUND IMPROVEMENTS TO SUPPORT PBU FABRICATION, TRAFFIC CONTROL INTO AND OUT OF THE SITE, TEMPORARY LANE CLOSURES FOR ACCESS TO THE SITE, DRAINAGE CONTROL MEASURES, RESTORING SITE TO ORIGINAL CONDITION ONCE CONSTRUCTION IS COMPLETE AND ANY OTHER INCIDENTAL COSTS SPECIFIC TO MAINTAINING A STAGING AREA IN THE I-91 MEDIAN IS INCLUDED UNDER THE ITEM "CONSTRUCTION ACCESS".
9. COST FOR STAGING AREAS ON BASSETT ROAD AND OTHER AREAS NOT WITHIN THE I-91 MEDIAN ARE INCLUDED UNDER THE MOBILIZATION COSTS.
10. TRAFFIC CLOSURES ON BASSETT ROAD AND I-91 SHALL BE IN ACCORDANCE WITH THE MAINTENANCE AND PROTECTION OF TRAFFIC PLANS AND IN ACCORDANCE WITH THE SPECIAL PROVISIONS.
11. INFORMATION FROM BOTH FIELD SURVEY AND LIDAR SURVEY ARE SHOWN ON THESE PLANS. LIDAR SURVEY IS TO BE USED FOR INFORMATION ONLY.
12. THE ENGINEER MAY REQUIRE ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES BASED ON FIELD CONDITIONS.

MEDIAN STAGING PLAN

SCALE: 1" = 50'



SCHEMATIC STAGING SECTION AT MEDIAN

NOT TO SCALE



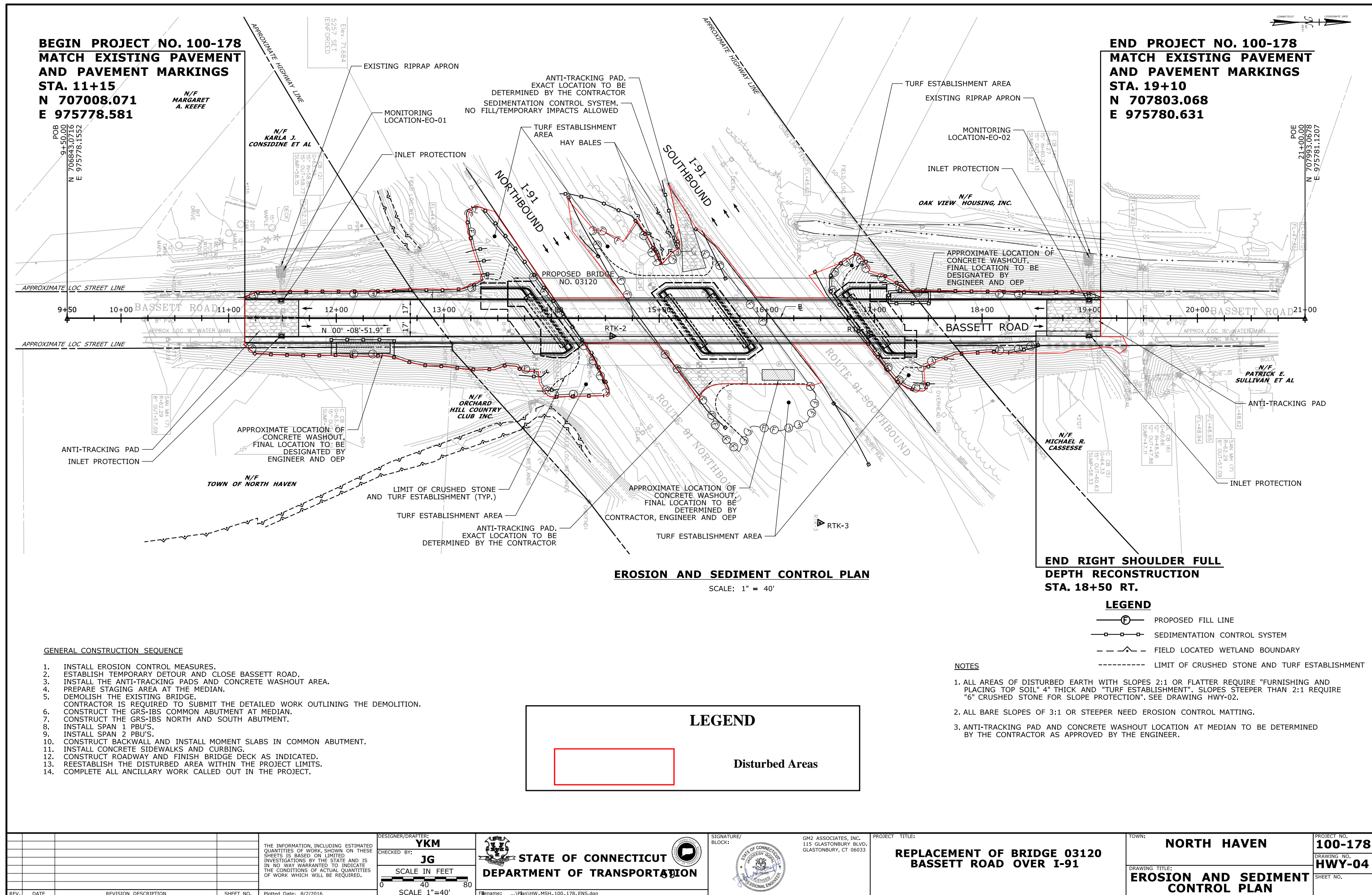
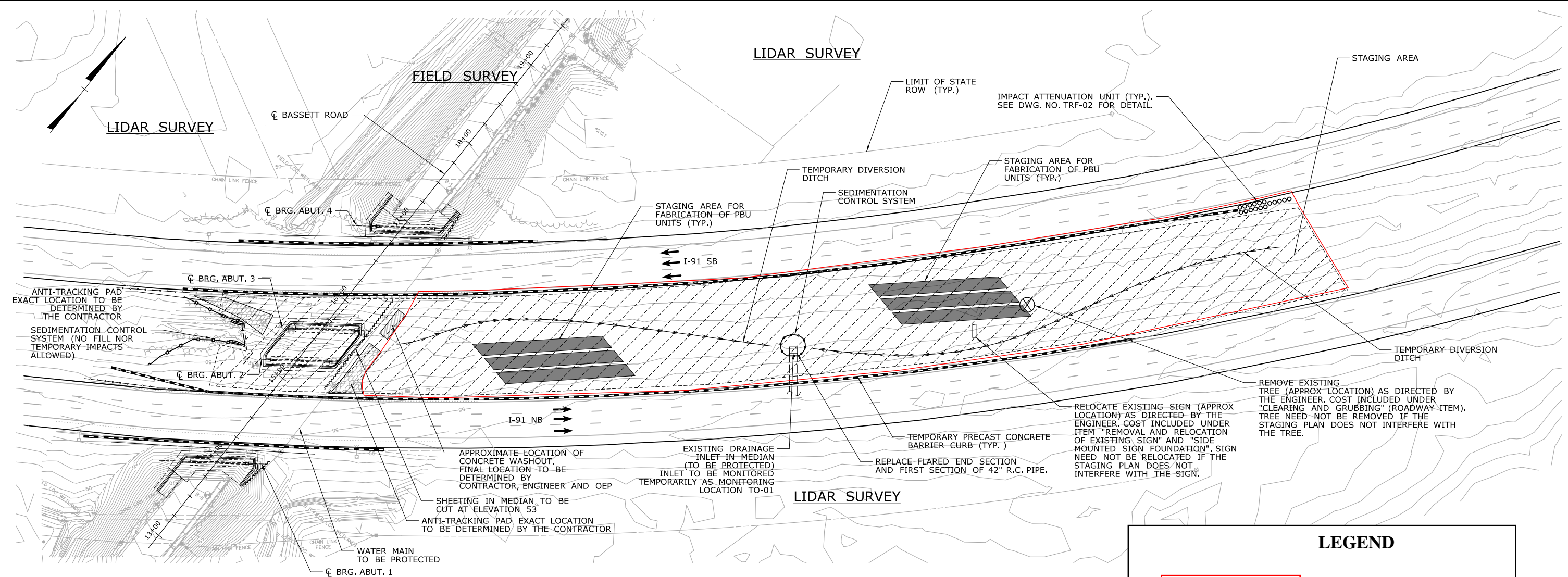
				DESIGNER/DRAFTER: DK		 STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION		SIGNATURE/ BLOCK: GM2 ASSOCIATES, INC. 115 GLASTONBURY BLVD. GLASTONBURY, CT 06033	PROJECT TITLE: REPLACEMENT OF BRIDGE 03120 BASSETT ROAD OVER I-91	TOWN: NORTH HAVEN	PROJECT NO. 100-178				
				CHECKED BY: JG											
				SCALE AS NOTED											
THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.				Plotted Date: 8/2/2016		Filename: ...\\SB_MSH_Br03120_100_178_SITE_ACCESS_PLAN.dgn		DRAWING TITLE: STAGING PLAN		SHEET NO. STR-16					
REV.	DATE	REVISION DESCRIPTION		SHEET NO.											

FIGURE A-2.2



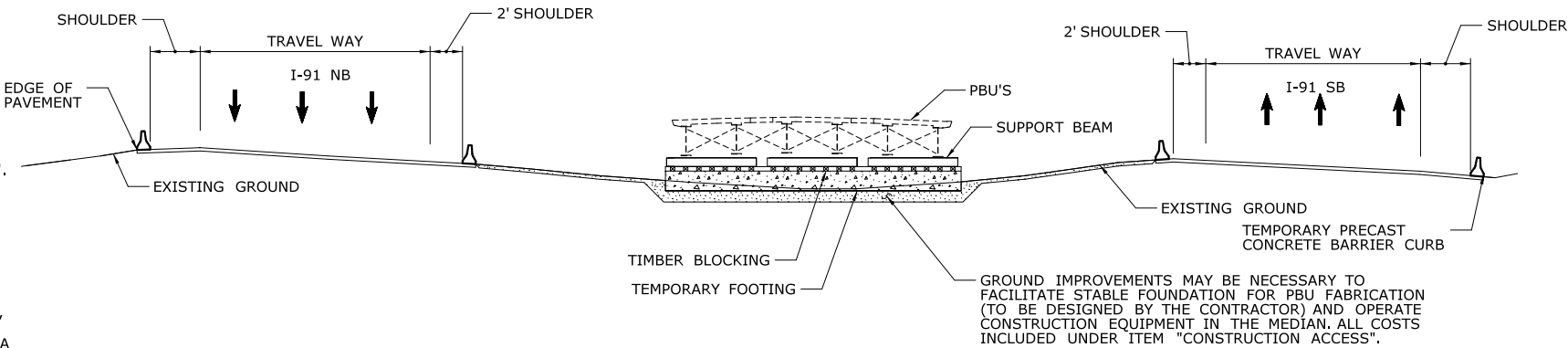


I-91 MEDIAN STAGING PLAN NOTES:

1. ALL SITE ACCESS PLANS SHOWN ON THE DRAWINGS ARE CONCEPTUAL. THE CONTRACTOR IS REQUIRED TO SUBMIT A DETAILED WORKING DRAWING SUBMISSION OUTLINING HIS SITE ACCESS PLAN IN ACCORDANCE WITH THE REQUIREMENTS OUTLINED IN THE SPECIAL PROVISION "CONSTRUCTION ACCESS".
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3. DURING ALL CONSTRUCTION WORK, THE CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO ENSURE THAT ALL WORK AT THE SITE ARE PERFORMED IN A SAFE MANNER.
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MEDIAN STAGING PLAN

SCALE: 1" = 50'



SCHEMATIC STAGING SECTION AT MEDIAN

NOT TO SCALE

LEGEND

Disturbed Areas




				DESIGNER/DRAFTER: DK		 STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION		SIGNATURE/ BLOCK: 	GM2 ASSOCIATES, INC. 115 GLASTONBURY BLVD. GLASTONBURY, CT 06033	PROJECT TITLE: REPLACEMENT OF BRIDGE 03120 BASSETT ROAD OVER I-91	TOWN: NORTH HAVEN	PROJECT NO. 100-178		
				CHECKED BY: JG									DRAWING TITLE: STAGING PLAN	DRAWING NO. STR-16
				SCALE AS NOTED										
THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.				Plotted Date: 8/2/2016		Filename: ...\\SB_MSH_Br03120_100_178_SITE_ACCESS_PLAN.dgn								
REV.	DATE	REVISION DESCRIPTION		SHEET NO.										

FIGURE A-3.2

Appendix B – Drainage Calculations

Point precipitation frequency estimates (inches/hour)

NOAA Atlas 14 Volume 10 Version 2

Data type: Precipitation intensity

Time series type: Partial duration

Project area: Northeastern States

Location name: North Haven, Connecticut, US*

Station Name: -

Latitude: 41.4020°

Longitude: -72.8380°

Elevation: 79 ft*

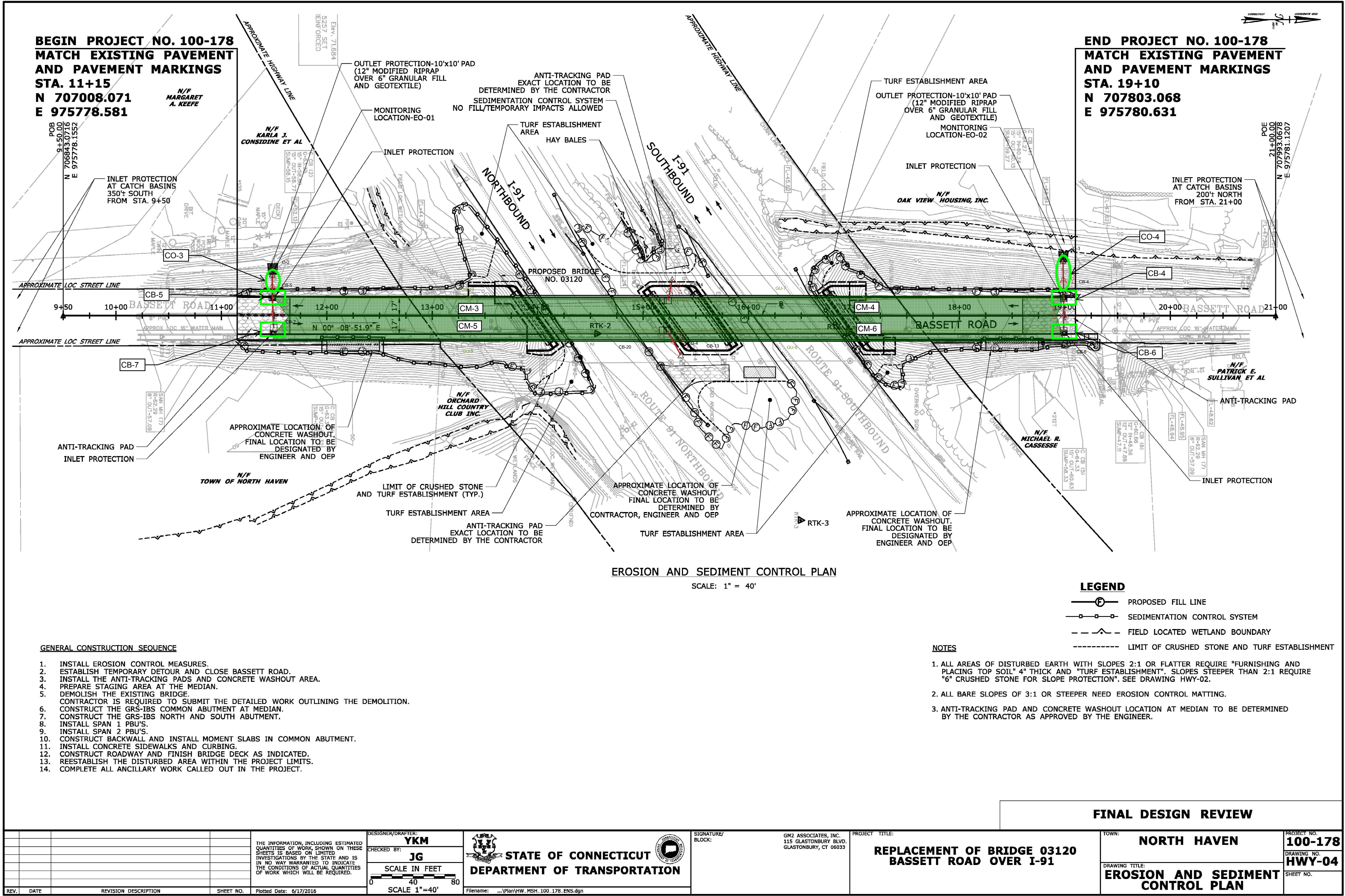
* source: Google Maps

Date/time (GMT): Tue Jul 19 17:08:45 2016

pyRunTime: 0.0927178859711

PRECIPITATION FREQUENCY ESTIMATES

by duration	1	2	5	10	25	50	100	200	500	1000 years
5-min:	4.12	4.98	6.4	7.58	9.2	10.45	11.71	13.3	15.41	16.99
10-min:	2.91	3.53	4.54	5.37	6.52	7.4	8.29	9.42	10.91	12.04
15-min:	2.28	2.77	3.56	4.21	5.11	5.81	6.5	7.39	8.56	9.44
30-min:	1.58	1.91	2.46	2.9	3.52	4	4.48	5.09	5.89	6.5
60-min:	1.01	1.22	1.57	1.85	2.25	2.55	2.85	3.24	3.75	4.14
2-hr:	0.66	0.8	1.01	1.19	1.44	1.63	1.82	2.08	2.42	2.67
3-hr:	0.51	0.62	0.78	0.92	1.11	1.26	1.4	1.6	1.86	2.06
6-hr:	0.33	0.39	0.5	0.59	0.71	0.8	0.9	1.03	1.2	1.33
12-hr:	0.2	0.24	0.31	0.37	0.44	0.5	0.56	0.65	0.76	0.84
24-hr:	0.12	0.14	0.19	0.22	0.27	0.31	0.35	0.41	0.48	0.54
2-day:	0.07	0.08	0.11	0.13	0.16	0.18	0.21	0.25	0.29	0.33
3-day:	0.05	0.06	0.08	0.1	0.12	0.13	0.15	0.18	0.22	0.24
4-day:	0.04	0.05	0.06	0.08	0.09	0.11	0.12	0.14	0.17	0.19
7-day:	0.03	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.11	0.12
10-day:	0.02	0.03	0.03	0.04	0.05	0.05	0.06	0.07	0.08	0.09
20-day:	0.02	0.02	0.02	0.02	0.03	0.03	0.04	0.04	0.05	0.05
30-day:	0.01	0.01	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.04
45-day:	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.03
60-day:	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02



Catchment FlexTable: CTDOT CATCHMENT								
ID	Label	Outflow Element	Area (User Defined) (acres)	Runoff Coefficient (Rational)	Catchment CA (acres)	Time of Concentration (min)	Flow (Total Out) (cfs)	Notes
33	CM-3	CB-19		0.950	0.122	5	1.13	
34	CM-4	CB-14		0.950	0.127	5	1.18	
55	CM-5	CB-20		0.950	0.161	5	1.49	
56	CM-6	CB-13		0.950	0.168	5	1.56	

DESIGN STORM: 25 YEAR STORM

Catch Basin FlexTable: CTDOT CATCHBASIN														
ID	Label	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Headloss Method	HEC-22 Benching Method	Inlet	Inlet Location	Manning's n (Inlet)	Longitudinal Slope (Inlet) (ft/ft)	Inlet Drainage Area (acres)	Flow (Captured) (cfs)	Capture Efficiency (Calculated) (%)
35	CB-4	64.27	60.13	60.70	60.70	Absolute	<None>	Curb Inlet	On Grade	0.012	0.047	(N/A)	0.93	78.3
36	CB-5	63.35	58.77	59.34	59.34	Absolute	<None>	Curb Inlet	On Grade	0.012	0.052	(N/A)	0.90	79.8
57	CB-6	64.33	60.63	61.12	61.12	Absolute	<None>	Curb Inlet	On Grade	0.012	0.047	(N/A)	1.15	73.8
59	CB-7	63.34	60.32	60.74	60.74	Absolute	<None>	Curb Inlet	On Grade	0.012	0.052	(N/A)	1.12	75.3
77	CB-13	78.37	0.00	0.05	0.05	Absolute	<None>	<None>	On Grade	0.013	0.001	0.177	0.00	0.1
78	CB-14	78.37	0.00	0.04	0.04	Absolute	<None>	<None>	On Grade	0.013	0.001	0.134	0.00	0.1
96	CB-19	78.37	0.00	(N/A)	(N/A)	Absolute	<None>	<None>	On Grade	0.013	0.010	0.128	0.00	0.1
97	CB-20	78.37	0.00	(N/A)	(N/A)	Absolute	<None>	<None>	On Grade	0.013	0.010	0.169	0.00	0.1

DESIGN STORM: 25 YEAR STORM

Conduit FlexTable: CTDOT CONDUIT

Label	Start Node	Invert (Start) (ft)	Stop Node	Invert (Stop) (ft)	Diameter (in)	Size	Manning's n	Length (Unified) (ft)	Slope (Calculated) (ft/ft)	Flow (cfs)	Flow / Capacity (Design) (%)	Capacity (Full Flow) (cfs)	Velocity (ft/s)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)	Depth (Out) (ft)	Depth (Normal) / Rise (%)
CO-3	CB-5	58.77	O-2	52.13	15.0	<None>	0.028	20.3	0.326	2.02	11.8	17.13	9.36	59.34	52.42	59.55	53.78	0.29	23.2
CO-4	CB-4	60.13	O-3	48.84	15.0	<None>	0.028	33.0	0.342	2.08	11.8	17.53	9.58	60.70	49.13	60.93	50.56	0.29	23.3
CO-5	CB-6	60.63	CB-4	60.24	15.0	<None>	0.028	28.3	0.014	1.15	32.7	3.52	2.57	61.12	60.70	61.22	60.82	0.46	39.3
CO-6	CB-7	60.32	CB-5	58.80	15.0	<None>	0.028	26.8	0.057	1.12	15.7	7.15	4.24	60.74	59.34	60.89	59.41	0.54	26.7
CO-12	CB-14	0.00	O-5	0.00	12.0	<None>	0.013	18.9	0.000	0.00	Infinity	0.00	0.00	0.04	0.01	0.04	0.02	0.01	(N/A)
CO-13	CB-13	0.00	O-4	0.00	12.0	<None>	0.013	24.4	0.000	0.00	Infinity	0.00	0.00	0.05	0.02	0.05	0.02	0.02	(N/A)

DESIGN STORM: 25 YEAR STORM

Outlet Protection

Project Name: North Haven Bridge # 03120

Project # 100_178

Date: August 8, 2016

Following Guidelines From ConnDOT Drainage Manual (May 2002)

From StormCAD

Outlet	25yr Q	25yr V	25yr TW
15" CMP South	2.02 cfs	9.36 fps	0.6 ft
15" CMP North	2.08 cfs	9.58 fps	0.6 ft

15" CMP South (STA 11+49)

Type 'C' Riprap Apron

Per Table 11.11

V = 8-10 fps

Therefore Use

Intermediate Riprap

$$La = ((3.0(Q-5))/Sp^{1.5})+10$$

$$La = ((3.0(1.8-5))/1.25^{1.5})+10$$

$$La = 3.1$$

Use 10' Minimum Length per Table 11-13.1

$$W3 = 3(Sp)$$

$$W3 = 3(1.25)$$

$$W3 = 4$$

OR

$$W3 = CB + (1 + TW)2Z$$

$$W3 = 2 + (1 + 0.5)2(3)$$

$$W2 = 11.00$$

Use 11'

OR

$$W3 = 2Z(0.7Rp) + CB$$

$$W3 = 2(3)(0.7(1.25)) + 2$$

$$7.25$$

15" CMP North (STA 19+00)

Type 'C' Riprap Apron

Per Table 11.11

V = 8-10 fps

Therefore Use

Intermediate Riprap

$$La = ((3.0(Q-5))/Sp^{1.5})+10$$

$$La = ((3(1.8-5))/1.25^{1.5})+10$$

$$La = 3.1$$

Use 10' Minimum Length per Table 11-13.1

$$W3 = 3(Sp)$$

$$W3 = 3(1.25)$$

$$W3 = 4$$

OR

$$W3 = CB + (1 + TW)2Z$$

$$W3 = 2 + (1 + 0.5)2(3)$$

$$W2 = 11.00$$

Use 11'

OR

$$W3 = 2Z(0.7Rp) + CB$$

$$W3 = 2(3)(0.7(1.25)) + 2$$

$$7.25$$

Prepared By: LKMM

Checked By: C. EATON

11.13.3 Design Criteria

The design of riprap outlet protection applies to the immediate area or reach downstream of the pipe outlet and does not apply to continuous rock linings of channels or streams. For pipe outlets at the top of exit slopes or on slopes greater than 10%, the designer should assure that suitable safeguards are provided beyond the limits of the localized outlet protection to counter the highly erosive velocities caused by the reconcentration of flow beyond the initial riprap apron. Outlet protection shall be designed according to the following criteria:

- Riprap outlet protection shall be used at all outlets not flowing over exposed rock or into deep watercourses and ponds.
- In situations not covered by the above noted criteria and where the exit velocity is ≤ 4.27 mps (14 fps), a riprap apron shall also be used. For Type A and B riprap aprons, the type of riprap specified is dependent on the outlet velocity (see Section 11.13.6) and can be determined from Table 11.5. For Type C aprons, the type of riprap specified is determined by the procedures in HEC-15 and HEC-11 depending on the design discharge. See Chapter 7, Channels.
- The type of riprap apron and dimensions are determined by the guidelines outlined in Sections 11.13.2 and 11.13.5, respectively.
- When the outlet velocity is > 4.27 mps (14 fps), the designer should first investigate methods to reduce the outlet velocity. This may be accomplished by any one or combination of the following: increasing the pipe roughness, increasing the pipe size and/or decreasing the culvert slope. When this is not possible or economical, a number of outlet protection or energy dissipation design options are available. These are presented in detail in HEC-14. In most instances, however, a preformed scour hole design should be used, as it generally can provide the necessary degree of protection at an economical cost. The design of a preformed scour hole is presented in Section 11.13.6.

The design criteria of this section should be applicable to most outlet situations. However, recognizing that design and site conditions can vary significantly depending on the project or location on a particular project, it is the responsibility of the designer to ensure that the criteria is suitable to the site or to provide an alternate design which will adequately protect the outlet area from scour and erosion. These situations should be documented in the drainage design report.

Table 11.11 Allowable Outlet Velocities for Type A and B Riprap Aprons

Outlet Velocity - mps (fps)	Riprap Specification
0-2.44 (0-8)	Modified
2.44-3.05 (8-10)	Intermediate
3.05-4.27 (10-14)	Standard

11.13.4 Tailwater Depth

The depth of tailwater immediately at the pipe outlet is required for the design of outlet protection and must be determined for the design flow rate. Manning's equation may be used to determine tailwater depth. See Sections 8.3.5 and 8.3.6 for additional information on how to determine the tailwater depth.

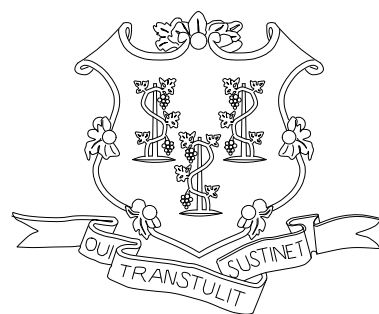
OUTLET PROTECTION - OUTLET VELOCITY ≤ 14 feet/sec

DISCHARGE (cfs)	OUTLET PIPE DIAMETER OR SPAN (in)									
	12	15	18	24	30	36	42	48	54	60
0-5	10	10		USE						
5.5	12	11								
6		12	12			MINIMUM				
7		14	13	12						
8			15	13						
8.5			16	14				LENGTH		
9				14						
10				15	14					
11				16	15					
12				17	15	14			OUTLINED	
13				18	16	15				
14					17	15	14			
16		USE			18	16	15	14		
18						18	16	15		
20						19	17	16		
22						20	18	16		
24							19	17	16	
26							20	18	17	16
28			PREFORMED				21	19	17	16
30							21	19	18	17
32							22	20	18	17
35								21	19	18
40								23	21	19
45								25	23	21
48					SCOUR			26	24	22
50									24	22
55									26	23
60									27	25
63									28	26
65										26
75							HOLE			29
80										30

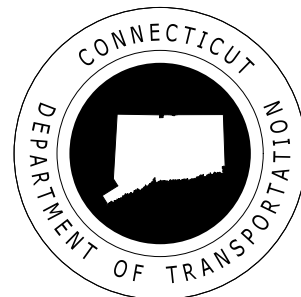
Table 11-13.1 - Length - L_a (feet)**Type B or C Riprap Apron**

Notes: 1. Bold face outlined boxes indicate minimum L_a to be used for a given pipe diameter or span.
 2. Rounding and interpolating are acceptable.

Appendix C – Plan Sheets



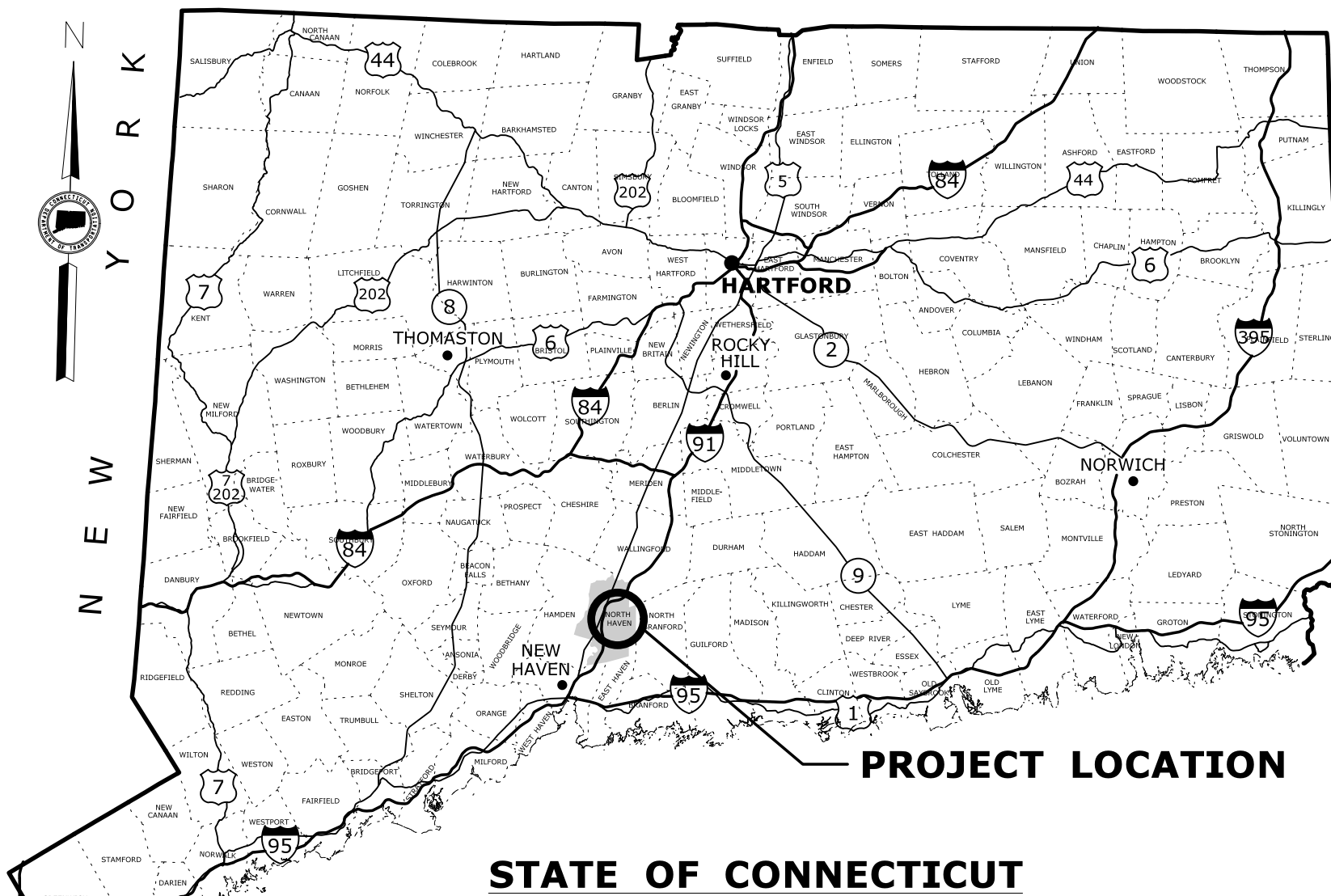
CONNECTICUT DEPARTMENT OF TRANSPORTATION



Plans For

REPLACEMENT OF BRIDGE NO. 03120 BASSETT ROAD OVER I-91

M A S S A C H U S E T T S



R H O D E I S L A N D

Town(s)/City of NORTH HAVEN

ROAD	MAINTENANCE RESPONSIBILITY	LENGTH
BASSETT ROAD	TOWN	795 FEET (STA. 11+15 TO STA. 19+10)
BRIDGE# 03120	STATE	300 FEET (STA. 13+92.73 TO STA. 16+92.73)
F.A.P. #	MAINTENANCE RESPONSIBILITY	PROJECT #
6100(005)	STATE	100-178

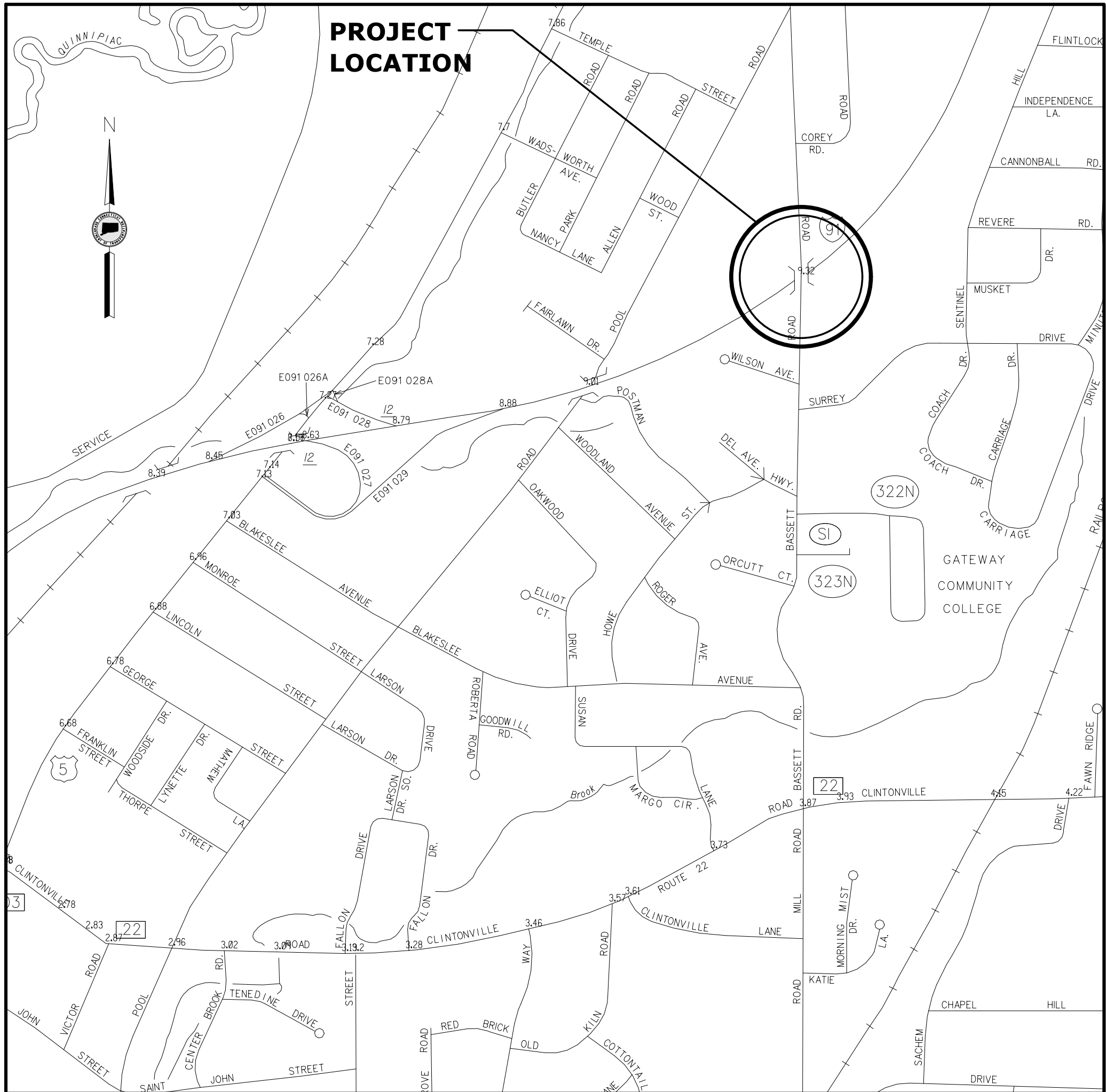
GENERAL NOTES:

1. FEDERAL AID PROJECT NO.: 6100(005)
2. CONSTRUCTION SPECIFICATIONS: CONNECTICUT DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATIONS FOR ROADS, BRIDGES AND INCIDENTAL CONSTRUCTION, FORM 816, DATED 2004; SUPPLEMENTAL SPECIFICATIONS, DATED JANUARY 2016; AND SPECIAL PROVISIONS
3. 400 FOOT GRID BASED ON CONNECTICUT COORDINATE SYSTEM N.A.D. 1983/ 2011
4. VERTICAL DATUM BASED ON NAVD 1988
5. ADT: 6,500 VEHICLES
6. DESIGN SPEED: 35 MPH
7. CLASSIFICATION: URBAN COLLECTOR

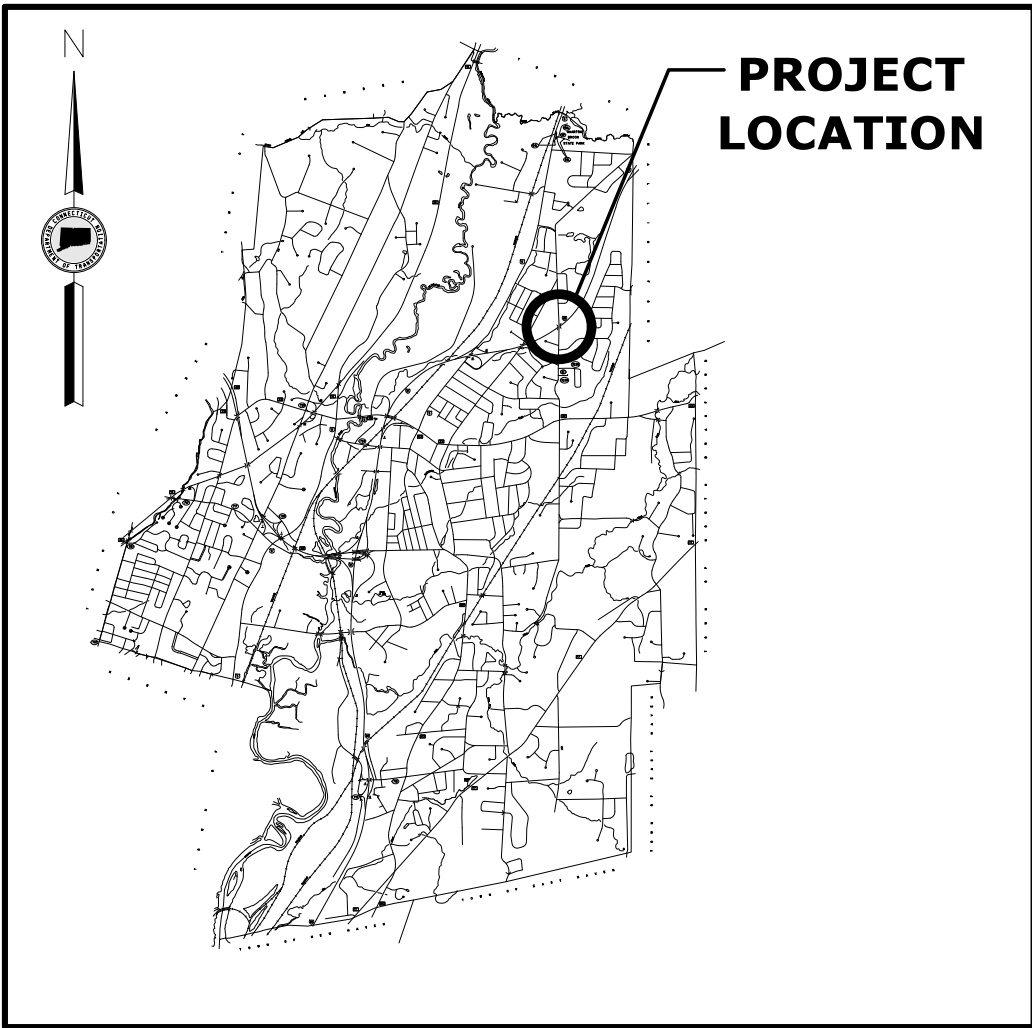
DISCLAIMER

IT IS THE RESPONSIBILITY OF EACH BIDDER AND ALL OTHER INTERESTED PARTIES TO OBTAIN ALL BIDDING RELATED INFORMATION AND DOCUMENTS FROM OFFICIAL SOURCES WITHIN THE DEPARTMENT.

PERSONS AND/OR ENTITIES WHICH REPRODUCE AND/OR MAKE SUCH INFORMATION AVAILABLE BY ANY MEANS ARE NOT AUTHORIZED BY THE DEPARTMENT TO DO SO AND MAY BE LIABLE FOR CLAIMS RESULTING FROM THE DISSEMINATION OF UNOFFICIAL, INCOMPLETE AND/OR INACCURATE INFORMATION.



LOCATION PLAN
NOT TO SCALE



TOWN OF NORTH HAVEN
NOT TO SCALE

LIST OF SUBSETS		
SUBSET NO.	SUBSET TITLE	*SUBSET SHEET COUNT
01	GENERAL	2
02	REVISIONS	1
03	STRUCTURE	45
04	HIGHWAY	14
05	TRAFFIC	4
06	ILLUMINATION	3
	HIGHWAY STANDARD SHEETS	
	TRAFFIC STANDARD SHEETS	

*THE INITIAL SUBSET SHEET COUNT DOES NOT INCLUDE ADDENDUMS AND CHANGE ORDERS

LIST OF DRAWINGS SUBSET 01 - GENERAL	
DRAWING TITLE	DRAWING NO.
TITLE SHEET	GEN-01
DETAIL ESTIMATE SHEET	GEN-02

North Arrow, W/No. Coord.	Grid Arrow	STANDARD CONVENTIONS	Water Edge	Riprap
Edge Of Road	Limit Of Marsh	Chain Link Fence	Stream	Hedge Row
Concrete Pavement	Stone Wall	Rustic Fence	Ditch	Tree Line
Dirt Road	Ledge Outcrop	Pipe Fence	TOWN LINE	Shrub
B.C.L.C.	Inland Wetland Limits	Board Fence	Highway Line	Evergreen Tree
Granite Curb	STATE LINE	Property Line	Street Line	Deciduous Tree
Guide Rail	Power Line	Lot Line		Retaining Wall
Concrete Median Barrier	Swamp	Easement Line		
Bit. Walk	Building			
Conc. Sidewalk	Transmission Tower			
Railroad Tracks				

THE DESIGN APPEARS TO CONFORM TO APPLICABLE CRITERIA. APPROVAL IS NOT TO BE CONSTRUED TO MEAN THAT ALL ASPECTS OF THE DESIGN HAVE BEEN PERSONALLY CHECKED BY THE UNDERSIGNED.

DESIGNED BY:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033



Jagdeesh Gopal
2016.08.03

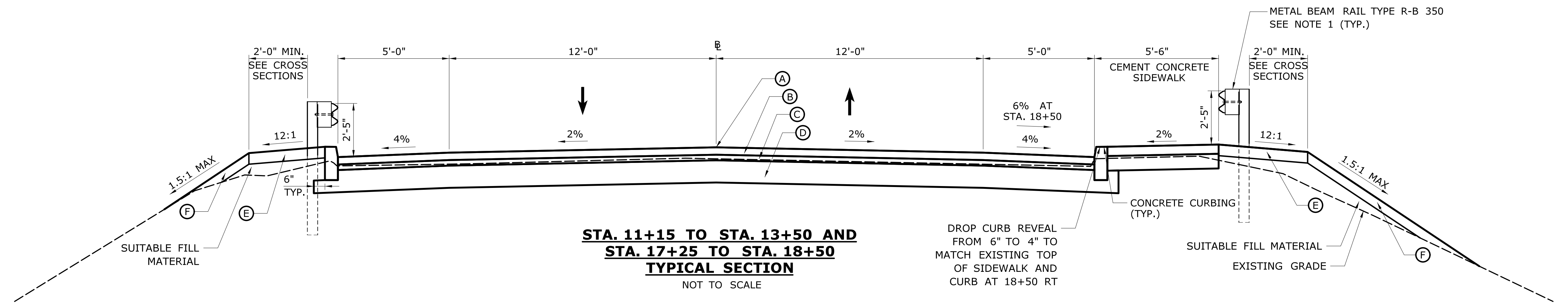
Plans For
REPLACEMENT OF BRIDGE NO. 03120
BASSETT ROAD OVER I-91

Town(s)/City
NORTH HAVEN

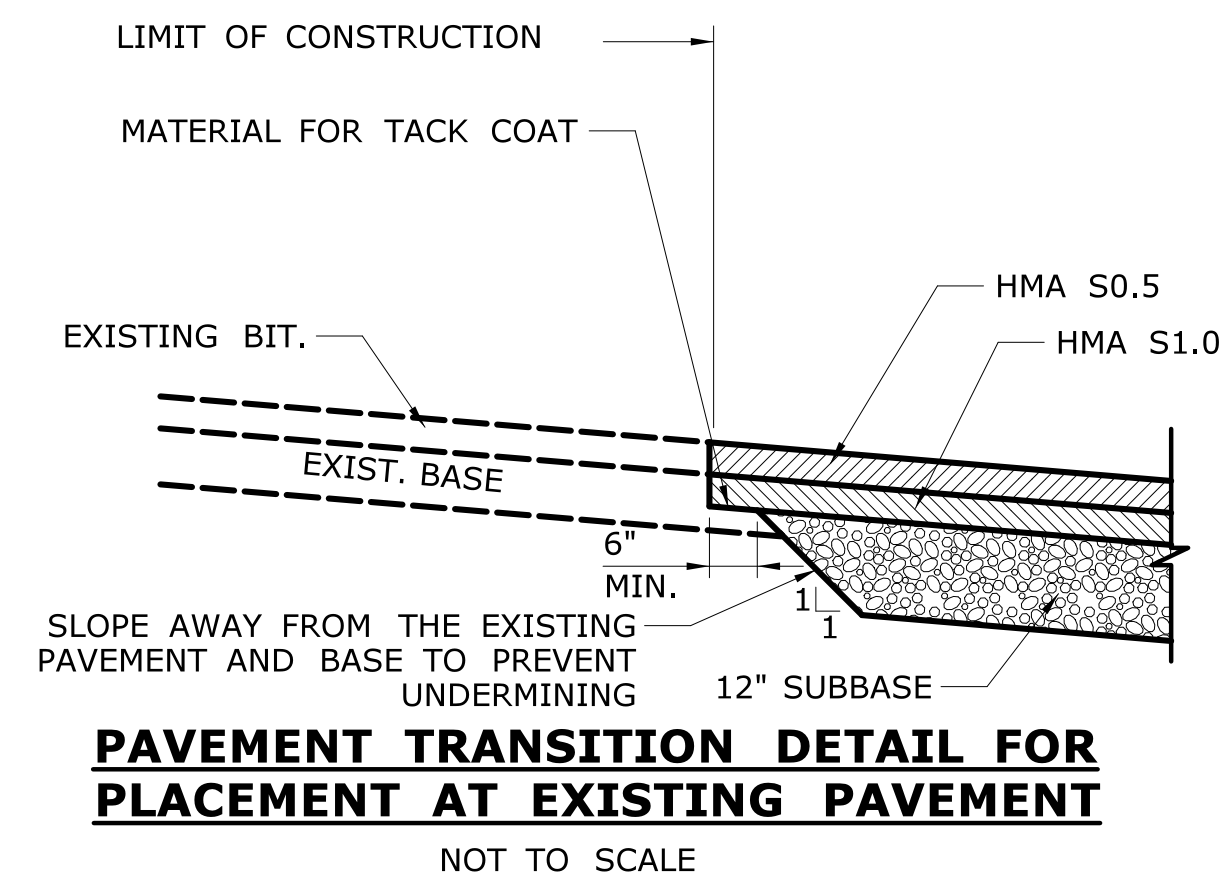
STATE PROJECT NO.

100-178

DRAWING NO.
GEN-01
SHEET NO.



FOR ROADWAY SECTION BETWEEN STA. 13+50 TO STA. 17+25 SEE STRUCTURE PLANS.
FOR ROADWAY SECTION BETWEEN STA. 18+50 RT TO STA. 19+10 RT, SEE NOTE 6 AND CROSS-SECTIONS.


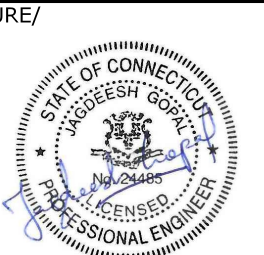


LEGEND:

- (A) POINT OF APPLICATION OF GRADE
- (B) 4" HMA S0.5 (TWO EQUAL LIFTS)
- (C) 4" HMA S1.0
- (D) 12" SUBBASE
- (E) 6" PROCESSED AGGREGATE
- (F) 6" CRUSHED STONE FOR SLOPE PROTECTION

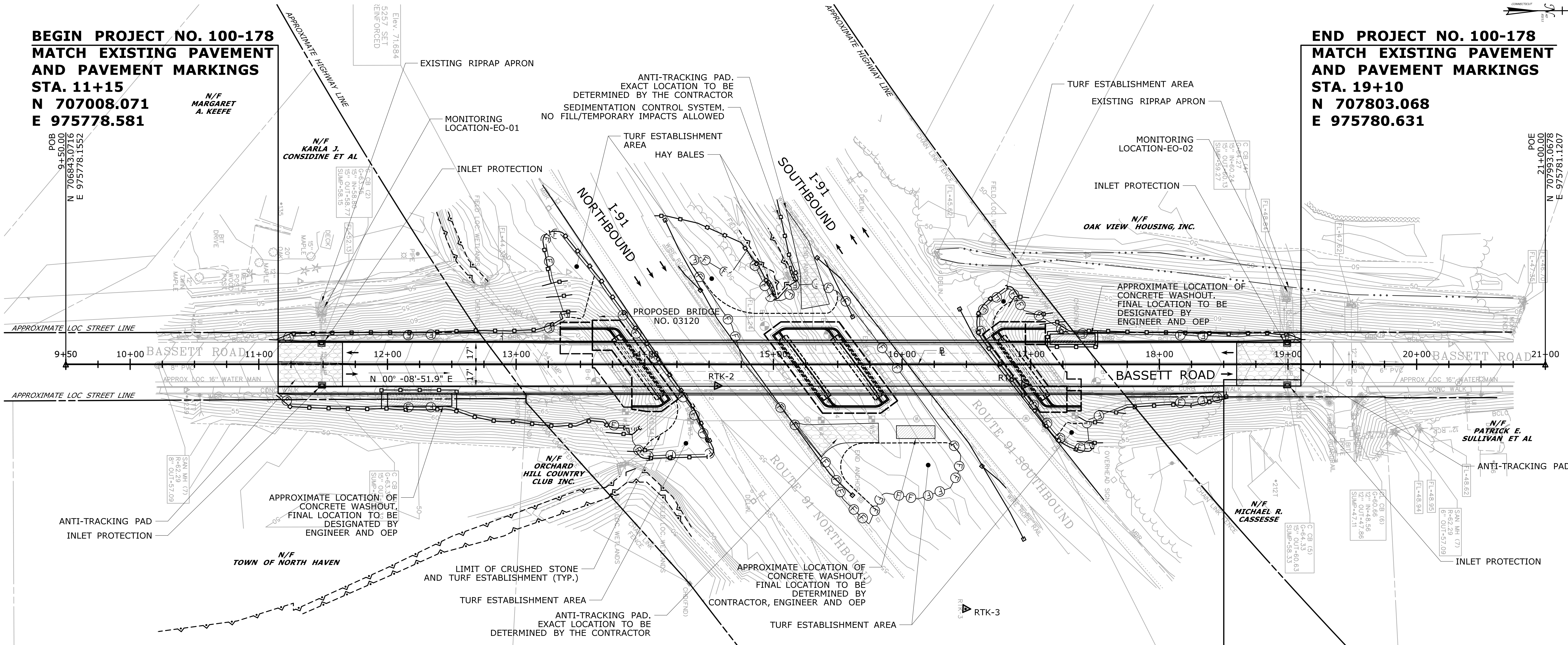
NOTES:

- SEE ROADWAY PLAN FOR GUIDERAIL LIMITS.
- UPON COMPLETION OF ALL OTHER CONSTRUCTION ITEMS, THE FINAL COURSE OF HMA SHALL BE PLACED IN ONE OPERATION OVER THE LIMITS SHOWN ON THE ROADWAY PLAN TO CREATE A CLEAN UNIFORM SURFACE.
- SLOPES 2:1 OR FLATTER REQUIRE "FURNISHING AND PLACING TOP SOIL" 4" THICK AND "TURF ESTABLISHMENT".
- SLOPES STEEPER THAN 2:1 REQUIRE "6" CRUSHED STONE FOR SLOPE PROTECTION".
- SUITABLE MATERIAL EXCAVATED DURING CONSTRUCTION OF ROADWAY TO BE USED FOR FILL MATERIAL.
- FROM STA. 18+50 RT TO STA. 19+10 RT, CONTINUE WITH FULL-DEPTH RECONSTRUCTION OF THE 12' NORTHBOUND TRAVEL LANE ONLY. FOR THE NORTHBOUND RIGHT SHOULDER, REMOVE THE EXISTING PAVEMENT STRUCTURE TO A DEPTH OF APPROXIMATELY 4" AND PLACE BACK 4" HMA S0.5 (PLACED IN TWO EQUAL LIFTS) ON THE EXISTING GRANULAR MATERIAL. DO NOT DISTURB THE EXISTING CURBING, SIDEWALK, GUIDERAIL, SLOPE AND PLANTINGS.

				DESIGNER/DRAFTER: YKM		 STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION		GM2 ASSOCIATES, INC. 115 GLASTONBURY BLVD. GLASTONBURY, CT 06033	PROJECT TITLE: REPLACEMENT OF BRIDGE 03120 BASSETT ROAD OVER I-91	TOWN: NORTH HAVEN	PROJECT NO. 100-178	
				CHECKED BY: LEP								DRAWING NO. HWY-02
				SCALE AS NOTED								
REV.	DATE	REVISION DESCRIPTION	SHEET NO.	Plotted Date: 8/2/2016		Filename: ...\\HW..MSH..100..178..TYP.dgn		DRAWING TITLE: TYPICAL ROADWAY SECTION				

BEGIN PROJECT NO. 100-178
MATCH EXISTING PAVEMENT
AND PAVEMENT MARKINGS
STA. 11+15
N 707008.071
E 975778.581

END PROJECT NO. 100-178
MATCH EXISTING PAVEMENT
AND PAVEMENT MARKINGS
STA. 19+10
N 707803.068
E 975780.631



EROSION AND SEDIMENT CONTROL PLAN

SCALE: 1" = 40'

END RIGHT SHOULDER FULL
DEPTH RECONSTRUCTION
STA. 18+50 RT.

LEGEND



- PROPOSED FILL LINE
- SEDIMENTATION CONTROL SYSTEM
- FIELD LOCATED WETLAND BOUNDARY
- LIMIT OF CRUSHED STONE AND TURF ESTABLISHMENT

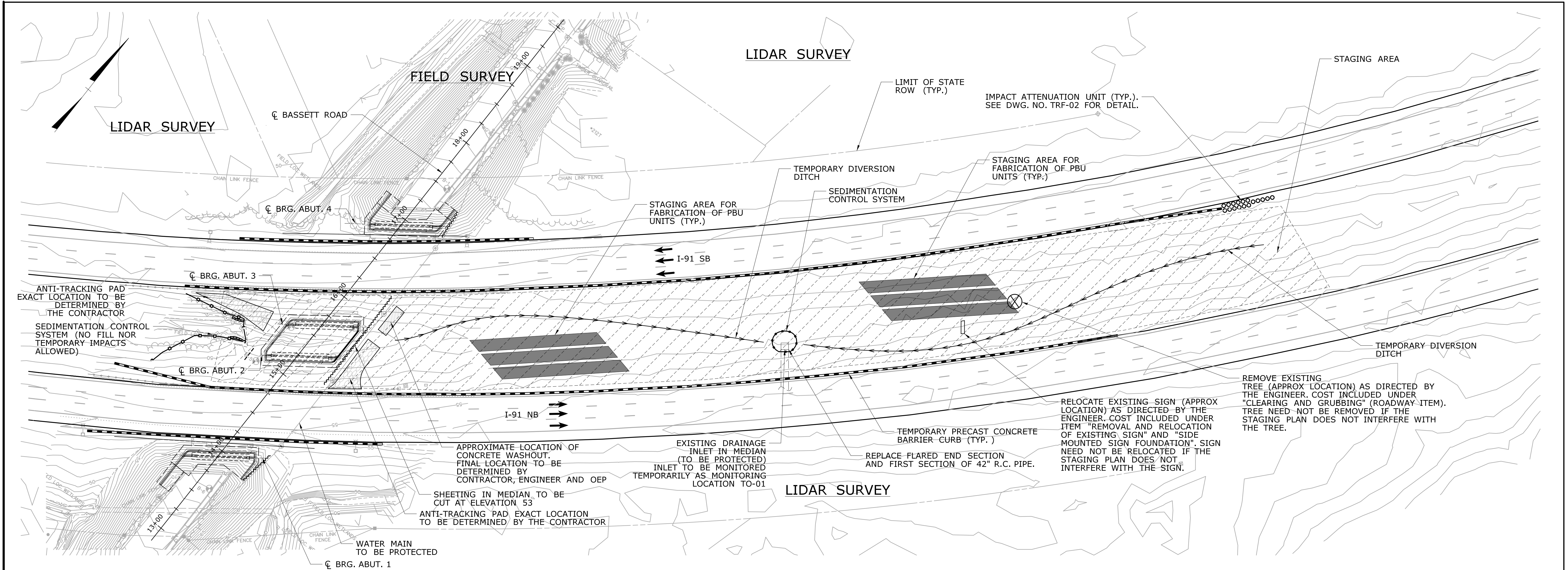
GENERAL CONSTRUCTION SEQUENCE

- INSTALL EROSION CONTROL MEASURES.
- ESTABLISH TEMPORARY DETOUR AND CLOSE BASSETT ROAD.
- INSTALL THE ANTI-TRACKING PADS AND CONCRETE WASHOUT AREA.
- PREPARE STAGING AREA AT THE MEDIAN.
- DEMOLISH THE EXISTING BRIDGE.
- CONTRACTOR IS REQUIRED TO SUBMIT THE DETAILED WORK OUTLINING THE DEMOLITION.
- CONSTRUCT THE GRS-IBS COMMON ABUTMENT AT MEDIAN.
- CONSTRUCT THE GRS-IBS NORTH AND SOUTH ABUTMENT.
- INSTALL SPAN 1 PBU'S.
- INSTALL SPAN 2 PBU'S.
- CONSTRUCT BACKWALL AND INSTALL MOMENT SLABS IN COMMON ABUTMENT.
- INSTALL CONCRETE SIDEWALKS AND CURBING.
- CONSTRUCT ROADWAY AND FINISH BRIDGE DECK AS INDICATED.
- REESTABLISH THE DISTURBED AREA WITHIN THE PROJECT LIMITS.
- COMPLETE ALL ANCILLARY WORK CALLED OUT IN THE PROJECT.

NOTES

- ALL AREAS OF DISTURBED EARTH WITH SLOPES 2:1 OR FLATTER REQUIRE "FURNISHING AND PLACING TOP SOIL" 4" THICK AND "TURF ESTABLISHMENT", SLOPES STEEPER THAN 2:1 REQUIRE "6" CRUSHED STONE FOR SLOPE PROTECTION". SEE DRAWING HWY-02.
- ALL BARE SLOPES OF 3:1 OR STEEPER NEED EROSION CONTROL MATTING.
- ANTI-TRACKING PAD AND CONCRETE WASHOUT LOCATION AT MEDIAN TO BE DETERMINED BY THE CONTRACTOR AS APPROVED BY THE ENGINEER.

				DESIGNER/DRAFTER: YKM CHECKED BY: JG SCALE IN FEET <div><div></div><div>04080</div></div> SCALE 1"=40'		 STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION Filename: ...\\Plan\\HW_MSH_100-178_ENS.dgn	SIGNATURE/ BLOCK:  GM2 ASSOCIATES, INC. 115 GLASTONBURY BLVD. GLASTONBURY, CT 06033	PROJECT TITLE: REPLACEMENT OF BRIDGE 03120 BASSETT ROAD OVER I-91	TOWN: NORTH HAVEN	PROJECT NO. 100-178
				THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.						DRAWING NO. HWY-04
				DRAWING TITLE: EROSION AND SEDIMENT CONTROL PLAN						SHEET NO.
REV.	DATE	REVISION DESCRIPTION	SHEET NO.	Plotted Date: 8/2/2016						

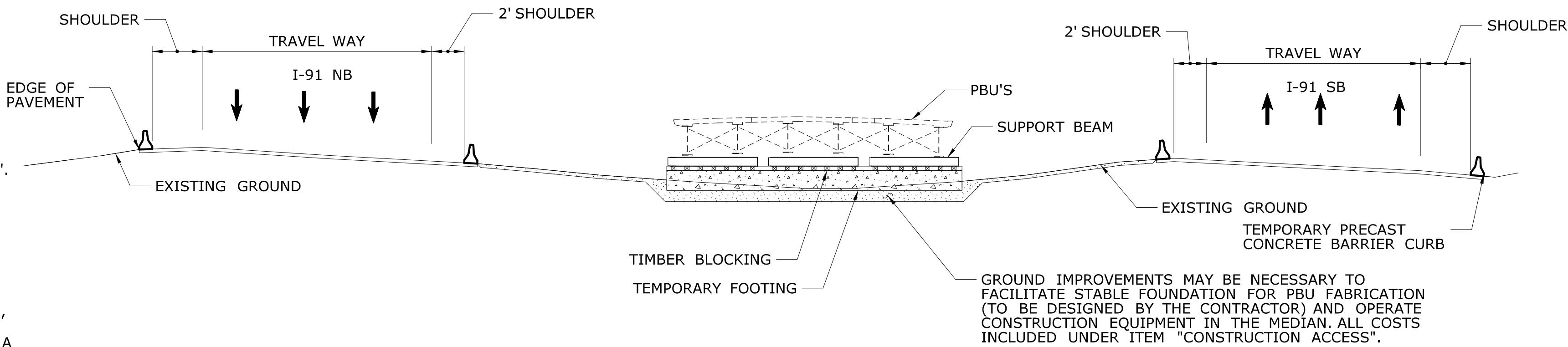


I-91 MEDIAN STAGING PLAN NOTES:

1. ALL SITE ACCESS PLANS SHOWN ON THE DRAWINGS ARE CONCEPTUAL. THE CONTRACTOR IS REQUIRED TO SUBMIT A DETAILED WORKING DRAWING SUBMISSION OUTLINING HIS SITE ACCESS PLAN IN ACCORDANCE WITH THE REQUIREMENTS OUTLINED IN THE SPECIAL PROVISION "CONSTRUCTION ACCESS".
2. THE CONCEPTUAL STAGING PLAN ASSUMES THAT THE PREFABRICATED BRIDGE UNITS WILL BE FABRICATED ON-SITE.
3. DURING ALL CONSTRUCTION WORK, THE CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO ENSURE THAT ALL WORK AT THE SITE ARE PERFORMED IN A SAFE MANNER.
4. ALL SITE WORK INCLUDING TRAFFIC INTO AND OUT OF THE SITE SHALL BE DONE IN ACCORDANCE WITH THE SPECIAL PROVISIONS "PROSECUTION AND PROGRESS", "LIMITATIONS OF OPERATIONS", "MAINTENANCE AND PROTECTION OF TRAFFIC" AND "CONSTRUCTION ACCESS".
5. THE CONTRACTOR SHALL CONSTRUCT AND MAINTAIN SAFE ZONES TO THE SITE FOR DELIVERIES INCLUDING INSTALLATION OF ANTI-TRACKING PADS. ALL PERTINENT INFORMATION SHALL BE SHOWN ON THE WORKING DRAWINGS SUBMISSION FOR "CONSTRUCTION ACCESS".
6. THE CONTRACTOR SHALL HAVE A PLAN TO MAINTAIN ADEQUATE DRAINAGE AT THE CONSTRUCTION SITE. DRAINAGE SHALL BE CHanneled AWAY FROM THE SITE TO AN UNUSED LOCATION OR CONNECTED TO EXISTING MEDIAN DRAINAGE. SHEET FLOW DRAINAGE FROM I-91 SHALL NOT BE IMPEDED AT ANY TIME.
7. FILLING IN OF WETLANDS OR OTHER WORK IN DESIGNATED WETLANDS WILL NOT BE ALLOWED.
8. ONCE ALL CONSTRUCTION WORK IS COMPLETE, THE CONTRACTOR SHALL RESTORE THE SITE TO ORIGINAL CONDITIONS. ALL COSTS TO DESIGN, ESTABLISH, MAINTAIN AND RESTORE THE I-91 MEDIAN STAGING SITE AREA INCLUDING GROUND IMPROVEMENTS TO SUPPORT PBU FABRICATION, TRAFFIC CONTROL INTO AND OUT OF THE SITE, TEMPORARY LANE CLOSURES FOR ACCESS TO THE SITE, DRAINAGE CONTROL MEASURES, RESTORING SITE TO ORIGINAL CONDITION ONCE CONSTRUCTION IS COMPLETE AND ANY OTHER INCIDENTAL COSTS SPECIFIC TO MAINTAINING A STAGING AREA IN THE I-91 MEDIAN IS INCLUDED UNDER THE ITEM "CONSTRUCTION ACCESS".
9. COST FOR STAGING AREAS ON BASSETT ROAD AND OTHER AREAS NOT WITHIN THE I-91 MEDIAN ARE INCLUDED UNDER THE MOBILIZATION COSTS.
10. TRAFFIC CLOSURES ON BASSETT ROAD AND I-91 SHALL BE IN ACCORDANCE WITH THE MAINTENANCE AND PROTECTION OF TRAFFIC PLANS AND IN ACCORDANCE WITH THE SPECIAL PROVISIONS.
11. INFORMATION FROM BOTH FIELD SURVEY AND LIDAR SURVEY ARE SHOWN ON THESE PLANS. LIDAR SURVEY IS TO BE USED FOR INFORMATION ONLY.
12. THE ENGINEER MAY REQUIRE ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES BASED ON FIELD CONDITIONS.

MEDIAN STAGING PLAN

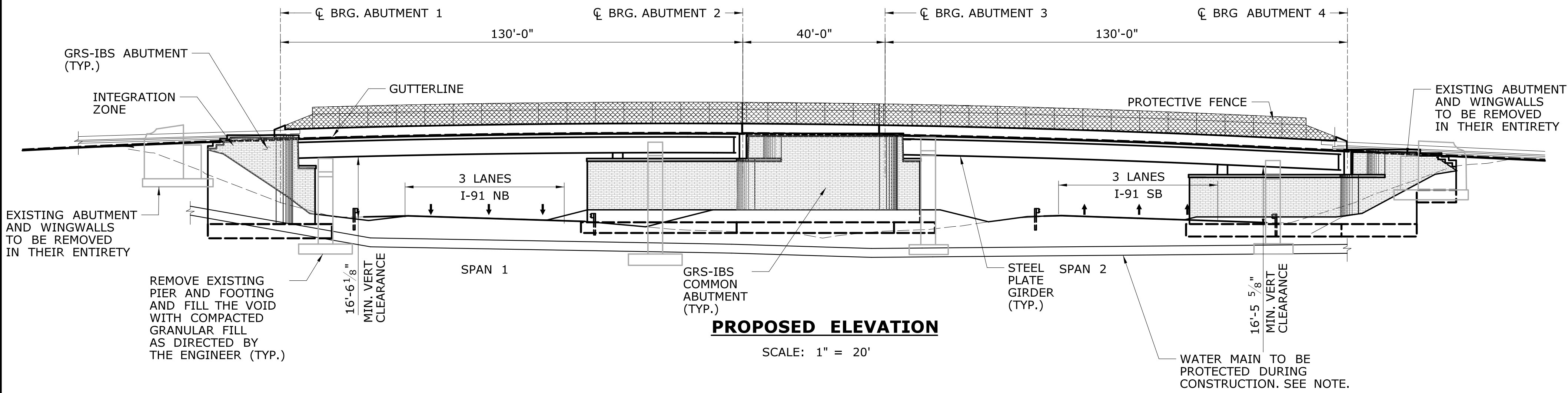
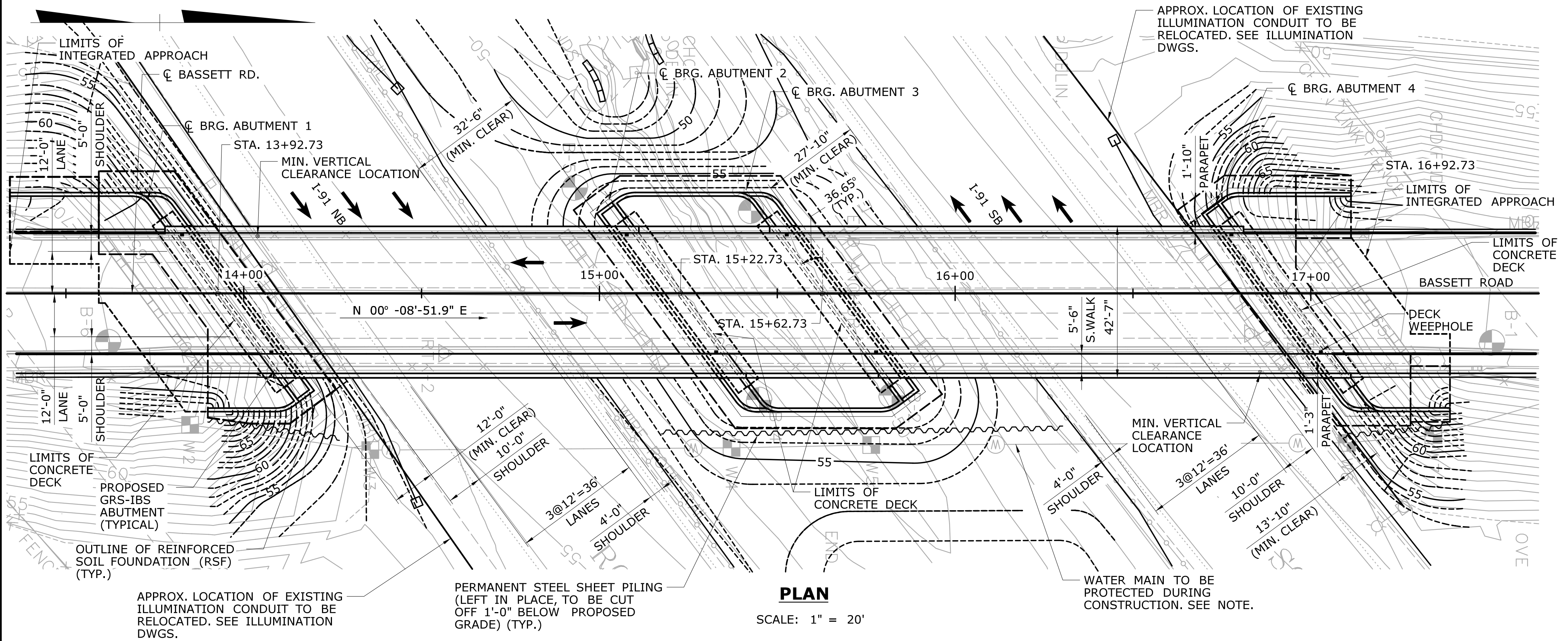
SCALE: 1" = 50'



SCHEMATIC STAGING SECTION AT MEDIAN

NOT TO SCALE

				THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.		DESIGNER/DRAFTER: DK CHECKED BY: JG SCALE AS NOTED	 STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION Filename: ...\\SB_MSH_Br03120-100-178-SITE_ACCESS-PLAN.dgn	SIGNATURE/ BLOCK: 	GM2 ASSOCIATES, INC. 115 GLASTONBURY BLVD. GLASTONBURY, CT 06033	PROJECT TITLE: REPLACEMENT OF BRIDGE 03120 BASSETT ROAD OVER I-91	TOWN: NORTH HAVEN	PROJECT NO. 100-178 DRAWING NO. STR-16 SHEET NO.
REV.	DATE	REVISION DESCRIPTION		SHEET NO.	Plotted Date: 8/2/2016							DRAWING TITLE: STAGING PLAN



NOTE: THE WATER MAIN IS CAPABLE OF SUPPORTING ONLY ROUTINE H2O LOADS. THE CONTRACTOR SHALL TAKE ADEQUATE PRECAUTIONS SO THAT THE AXLE LOADS THAT TRAVEL OVER THE WATER MAIN EITHER ON I-91 OR WITHIN THE MEDIAN DO NOT EXCEED THE LOADS (INDIVIDUAL OR GROUPS OF AXLES) IMPOSED BY A H2O VEHICLE.

NOTICE TO BRIDGE INSPECTORS	
THE DEPARTMENT'S BRIDGE SAFETY PROCEDURES REQUIRE THIS BRIDGE TO BE INSPECTED FOR, BUT NOT LIMITED TO, ALL APPROPRIATE COMPONENTS INDICATED IN THE GOVERNING MANUAL FOR BRIDGE INSPECTION. ATTENTION MUST BE GIVEN TO INSPECTING THE FOLLOWING SPECIAL COMPONENTS AND DETAILS, (THE LISTING FOR SPECIFIC ATTENTION SHALL NOT BE CONSTRUED TO REDUCE THE IMPORTANCE OF INSPECTION OF ANY OTHER COMPONENT OF THE STRUCTURE). THE FREQUENCY OF INSPECTION OF THIS STRUCTURE SHALL BE IN ACCORDANCE WITH THE GOVERNING MANUALS FOR BRIDGE INSPECTION. UNLESS OTHERWISE DIRECTED BY THE MANAGER OF SAFETY AND EVALUATION.	
COMPONENT OR DETAIL	STRUCTURE SHEET REFERENCE
FOLLOW NORMAL INSPECTION PROCEDURES	

CONCRETE DISTRIBUTION		
SUPERSTRUCTURE	C.Y.	648
SUBSTRUCTURE	C.Y.	181
FOOTINGS	C.Y.	N/A
TOTAL	C.Y.	829

STEEL PLATE GIRDER SHIPPING DATA			
MAX. SHIPPING LENGTH	MAX. SHIPPING HEIGHT	MAX. SHIPPING WIDTH	MAX. SHIPPING WEIGHT
131'-6"	5'-10"	1'-6"	33,000 LBS

INSPECTION OF FIELD WELDS		
METHOD	UNIT	QUANTITY
ULTRASONIC	IN	-
MAGNETIC PARTICLE	IN	-

GENERAL NOTES:

SPECIFICATIONS: CONNECTICUT DEPARTMENT OF TRANSPORTATION FORM 816 (2004), SUPPLEMENTAL SPECIFICATIONS DATED JANUARY 2016 AND SPECIAL PROVISIONS.

DESIGN SPECIFICATION: AASHTO LRFD DESIGN SPECIFICATIONS, 7TH EDITION (2014), WITH THE INTERIM SPECIFICATIONS UP TO AND INCLUDING (2015), AS SUPPLEMENTED BY THE CONNECTICUT DEPARTMENT OF TRANSPORTATION BRIDGE DESIGN MANUAL (2003), WITH THE LATEST REVISIONS.

FHWA GEOSYNTHETIC REINFORCED SOIL INTEGRATED BRIDGE SYSTEM (GRS-IBS) INTERIM IMPLEMENTATION GUIDE DATED JUNE 2012

ALLOWABLE DESIGN STRESSES: CLASS "F" CONCRETE BASED ON $f_c=4,000$ psi
HIGH EARLY STRENGTH CONCRETE BASED ON $f_c=4,000$ psi
CLASS "50" CONCRETE BASED ON $f_c=5,000$ psi
REINFORCEMENT (ASTM A615, GRADE 60), $F_y= 60,000$ psi

THE SPECIFIED CONCRETE STRENGTH USED IN DESIGN, f_c , OF THE CONCRETE COMPONENTS IS NOTED ABOVE. THE MINIMUM COMPRESSIVE STRENGTH OF THE CONCRETE IN THE CONSTRUCTED COMPONENTS SHALL CONFORM TO THE REQUIREMENTS OF "SECTION 6.01 CONCRETE FOR STRUCTURES."

STRUCTURAL STEEL: SEE STRUCTURAL STEEL NOTES ON DWG. STR-34 FOR DESIGNATIONS AND REQUIREMENTS.

BITUMINOUS CONCRETE OVERLAY: THIS SHALL CONSIST OF TWO LIFTS: THE FIRST SHALL BE "HMA 50.25" (1" THICK) AND THE SECOND LIFT SHALL BE "HMA 50.5" (2" THICK).

FOUNDATION PRESSURES: THE LIMIT STATES NOTED ON THE SUBSTRUCTURE PLAN SHEETS REFER TO LIMIT STATES AS GIVEN IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

BORING LOGS: FOR BORING LOGS, SEE DWG. STR-06 THROUGH STR-15.

DIMENSIONS: WHEN DECIMAL DIMENSIONS ARE GIVEN LESS THAN THREE DECIMAL PLACES, THE OMITTED DIGITS SHALL BE ASSUMED TO BE ZEROS.

EXISTING DRAWINGS: PLANS OF THE EXISTING STRUCTURE ARE INCLUDED FOR GENERAL REFERENCE ONLY AND MAY NOT DEPICT AS-BUILT CONDITIONS NOR ALL MODIFICATIONS MADE SINCE ORIGINAL CONSTRUCTION. THE CONTRACTOR SHALL TAKE ALL FIELD MEASUREMENTS NECESSARY TO ASSURE PROPER FIT OF THE FINISHED WORK AND SHALL ASSUME FULL RESPONSIBILITY FOR THEIR ACCURACY.

UTILITIES: THE CONTRACTOR SHALL PROTECT AND MAINTAIN ALL EXISTING UTILITIES WITHIN THE PROJECT LIMITS, UNLESS NOTED OTHERWISE. IF ANY UTILITY IS DAMAGED OR SERVICE IS INTERRUPTED DURING CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING FULL SERVICE IN A SAFE MANNER APPROVED BY THE UTILITY COMPANY AND ENGINEER.

LIVE LOAD: HL-93.

FUTURE PAVING ALLOWANCE: NONE.

CONCRETE NOTES:

STAY-IN-PLACE FORMS: THE USE OF STAY-IN-PLACE FORMS ON THIS STRUCTURE IS ALLOWED.

COMPOSITE CONSTRUCTION: NO TEMPORARY INTERMEDIATE SUPPORTS SHALL BE USED DURING THE PLACING AND SETTING OF THE CONCRETE DECK SLAB. TEMPORARY SUPPORTS MAY BE USED FOR STRUCTURAL STEEL ERECTION ONLY. CONSTRUCTION LOADS AND DEAD LOADS WILL BE PERMITTED WHEN DIRECTED BY THE ENGINEER BUT ONLY WHEN THE CONCRETE HAS REACHED A STRENGTH OF $f_c = 3500$ psi. LIVE LOADS (TRAFFIC) WILL BE PERMITTED ON THE STRUCTURE AFTER THE CONCRETE HAS REACHED A STRENGTH OF $f_c = 4000$ psi.

GLOBAL LATERAL STABILITY: THE CONTRACTOR NEEDS TO TAKE ADEQUATE PRECAUTIONS TO ENSURE THAT THE LATERAL STABILITY OF THE BEAMS CAN BE MAINTAINED DURING CONSTRUCTION OF THE DECK. THIS WILL INCLUDE TEMPORARY EXTERNAL OR INTERNAL BRACES FOR THE TOP FLANGE.

CLASS "50" CONCRETE: CLASS "50" CONCRETE SHALL BE USED FOR THE PRECAST CONCRETE LOAD DISTRIBUTION SLABS AND THE PRECAST PORTIONS OF THE MOMENT SLABS IN THE COMMON ABUTMENT.

CLASS "F" CONCRETE: CLASS "F" CONCRETE SHALL BE USED FOR THE PRECAST PORTIONS OF THE CONCRETE DECK, PARAPETS, SIDEWALKS AND C.I.P. PORTIONS OF THE MOMENT SLAB.

HIGH EARLY STRENGTH CONCRETE: HIGH EARLY STRENGTH CONCRETE SHALL BE USED FOR CAST IN PLACE CLOSURE POURS BETWEEN PREFABRICATED BRIDGE UNITS, CLOSURE POUR IN THE DISTRIBUTION SLAB, THE CAST-IN-PLACE BACKWALL AND TO FILL THE DECK OPENING FOR THE LIFTING LUG.

EXPOSED EDGES: EXPOSED EDGES OF CONCRETE SHALL BE BEVELED 1" X 1" UNLESS DIMENSIONED OTHERWISE.

CONCRETE COVER: ALL REINFORCEMENT SHALL HAVE 2" COVER UNLESS DIMENSIONED OTHERWISE.

REINFORCEMENT: ALL REINFORCEMENT SHALL BE ASTM A615, GRADE 60 UNLESS NOTED OTHERWISE.

EPOXY COATED REINFORCING BARS: ALL REINFORCEMENT IN THE PARAPETS, DECK SLABS, SIDEWALK, BACKWALLS, DISTRIBUTION SLABS, MOMENT SLABS AND IN THE TOP MAT OF THE CONCRETE APPROACH SLABS SHALL BE EPOXY COATED UNLESS OTHERWISE NOTED. THESE BARS SHALL BE INCLUDED IN THE PAY ITEM "DEFORMED STEEL BARS (EPOXY COATED)".

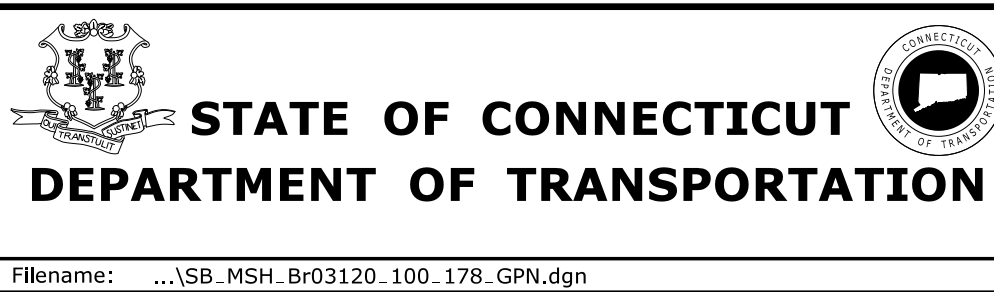
CLOSED CELL ELASTOMER: THE COST OF FURNISHING AND INSTALLING CLOSED CELL ELASTOMER SHALL BE INCLUDED IN THE PAY ITEM "GRS ABUTMENT AND WINGWALL".

CONSTRUCTION JOINTS: CONSTRUCTION JOINTS, OTHER THAN THOSE SHOWN ON THE PLANS, WILL NOT BE PERMITTED WITHOUT PRIOR APPROVAL OF THE ENGINEER.

PARAPETS AND SIDEWALKS: PARAPETS AND SIDEWALKS SHALL BE CAST IN PLACE.

REV.	DATE	REVISION DESCRIPTION	SHEET NO.	Plotted Date: 8/2/2016

DESIGNER/DRAFTER:
SC/AB
CHECKED BY:
JG
SCALE AS NOTED



GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

PROJECT TITLE:

**REPLACEMENT OF BRIDGE 03120
BASSETT ROAD OVER I-91**

TOWN:

NORTH HAVEN

DRAWING TITLE:

GENERAL PLAN

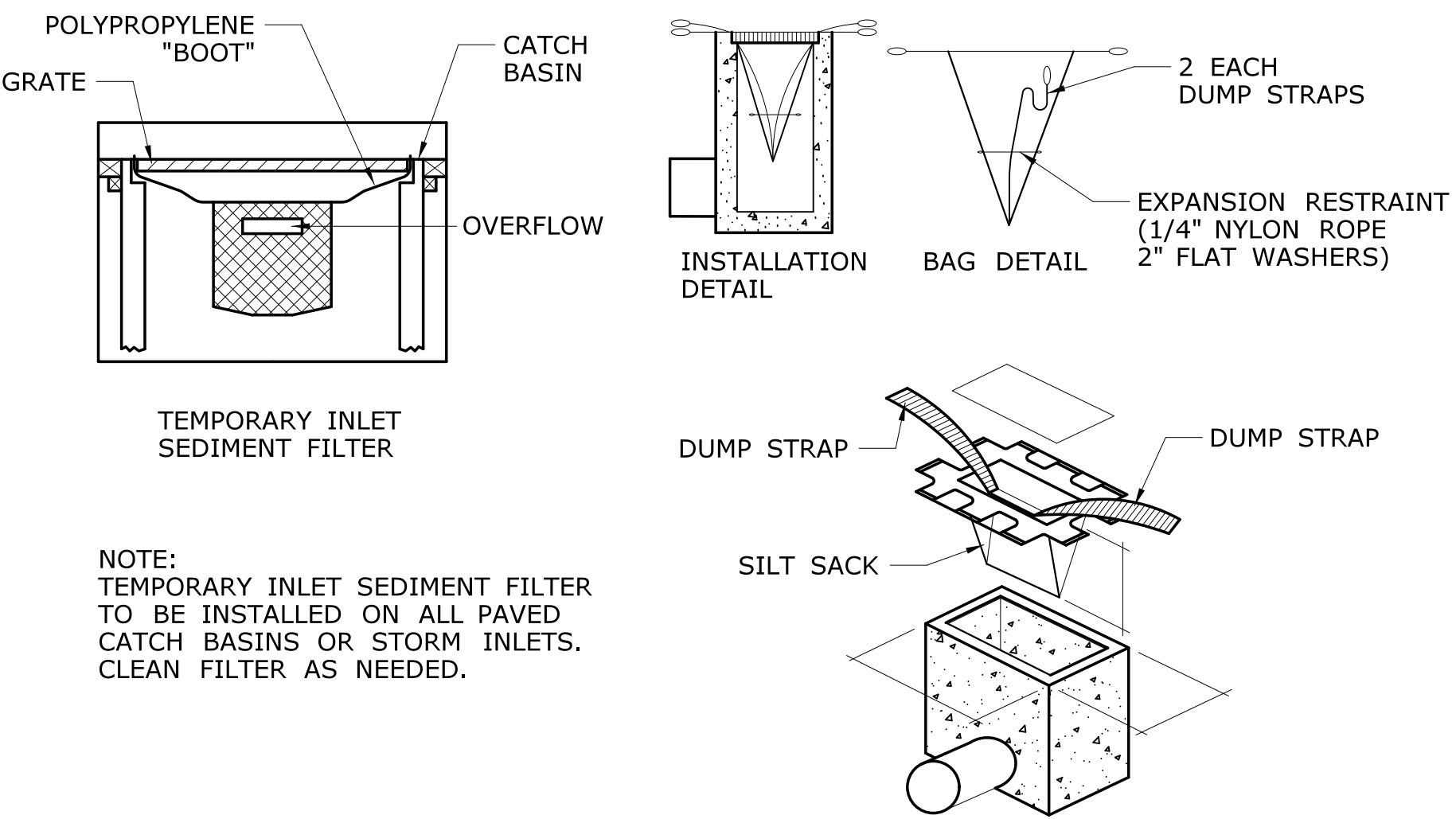
PROJECT NO.

100-178

DRAWING NO.

STR-02

SHEET NO.



NOTE:
TEMPORARY INLET SEDIMENT FILTER
TO BE INSTALLED ON ALL PAVED
CATCH BASINS OR STORM INLETS.
CLEAN FILTER AS NEEDED.

**INLET PROTECTION
SILT SACK DETAIL**
NOT TO SCALE

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Appendix D – Stormwater Monitoring Report Form



Connecticut Department of
Energy & Environmental Protection
Bureau of Materials Management & Compliance Assurance
Water Permitting & Enforcement Division

General Permit for the Discharge of Stormwater and Dewatering Wastewaters from
Construction Activities, issued 8/21/13, effective 10/1/13
Stormwater Monitoring Report

SITE INFORMATION

Permittee:	_____
Mailing Address:	_____
Business Phone:	_____ ext.: _____ Fax: _____
Contact Person:	_____ Title: _____
Site Name:	_____
Site Address:	_____
Receiving Water (name, basin):	_____
Stormwater Permit No.	<u>GSN</u> _____

SAMPLING INFORMATION (Submit a separate form for each outfall)

Outfall Designation:	_____	Date/Time Collected:	_____
Outfall Location(s) (lat/lon or map link):	_____		
Person Collecting Sample:	_____		
Storm Magnitude (inches):	_____	Storm Duration (hours):	_____
Size of Disturbed Area at any time:	_____		

MONITORING RESULTS

Sample #	Parameter	Method	Results (units)	Laboratory (if applicable)
1	Turbidity			
2	Turbidity			
3	Turbidity			
4	Turbidity			
(provide an attachment if more than 4 samples were taken for this outfall)			Avg =	

STATEMENT OF ACKNOWLEDGMENT

I certify that the data reported on this document were prepared under my direction or supervision in accordance with the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities. The information submitted is, to the best of my knowledge and belief, true, accurate and complete.

Authorized Official:	_____
Signature:	_____ Date: _____

Please send completed form to:

DEPARTMENT OF ENERGY & ENVIRONMENTAL PROTECTION
BUREAU OF MATERIALS MANAGEMENT AND COMPLIANCE ASSURANCE
79 ELM STREET
HARTFORD, CT 06106-5127
ATTN: NEAL WILLIAMS

Appendix E – Notice of Termination Form



General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities

Notice of Termination Form

Please complete and submit this form in accordance with the general permit (DEP-PED-GP-015) in order to ensure the proper handling of your termination. Print or type unless otherwise noted.

Note: Ensure that for commercial and industrial facilities, registrations under the *General Permit for the Discharge of Stormwater Associated with Industrial Activity* (DEP-PED-GP-014) or the *General Permit for the Discharge of Stormwater from Commercial Activities* (DEP-PED-GP-004) have been filed where applicable. For questions about the applicability of these general permits, please call the Department at 860-424-3018.

Part I: Registrant Information

1. Permit number: **GSN**
2. Fill in the name of the registrant(s) as indicated on the registration certificate:
Registrant:
3. Site Address:
City/Town: State: Zip Code:
4. Date all storm drainage structures were cleaned of construction sediment:
Date of Completion of Construction:
Date of Last Inspection (must be at least three months after final stabilization pursuant to Section 6(b)(6)(D) of the general permit):
5. Check the post-construction activities at the site (check all that apply):
☐ Industrial ☐ Residential ☐ Commercial ☐ Capped Landfill
☐ Other (describe):

Part II: Certification

"I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify that, based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief. I understand that a false statement made in this document or its attachments may be punishable as a criminal offense, in accordance with Section 22a-6 of the Connecticut General Statutes, pursuant to Section 53a-157b of the Connecticut General Statutes, and in accordance with any other applicable statute."

Signature of Permittee

Date

Name of Permittee (print or type)

Title (if applicable)


Note: Please submit this Notice of Termination Form to:

STORMWATER PERMIT COORDINATOR
BUREAU OF WATER MANAGEMENT
DEPARTMENT OF ENVIRONMENTAL PROTECTION
79 ELM STREET
HARTFORD, CT 06106-5127

Natural Diversity Data Base Areas

NORTH HAVEN, CT

September 2015

 State and Federal Listed Species
& Significant Natural Communities

 Town Boundary

NOTE: This map shows general locations of State and Federal Listed Species and Significant Natural Communities. Information on listed species is collected and compiled by the Natural Diversity Data Base (NDDB) from a number of data sources. Exact locations of species have been buffered to produce the general locations. Exact locations of species and communities occur somewhere in the shaded areas, not necessarily in the center. A new mapping format is being employed that more accurately models important riparian and aquatic areas and eliminates the need for the upstream/downstream searches required in previous versions.

This map is intended for use as a preliminary screening tool for conducting a Natural Diversity Data Base Review Request. To use the map, locate the project boundaries and any additional affected areas. If the project is within a shaded area there may be a potential conflict with a listed species. For more information, complete a Request for Natural Diversity Data Base State Listed Species Review form (DEP-APP-007), and submit it to the NDDB along with the required maps and information. More detailed instructions are provided with the request form on our website.

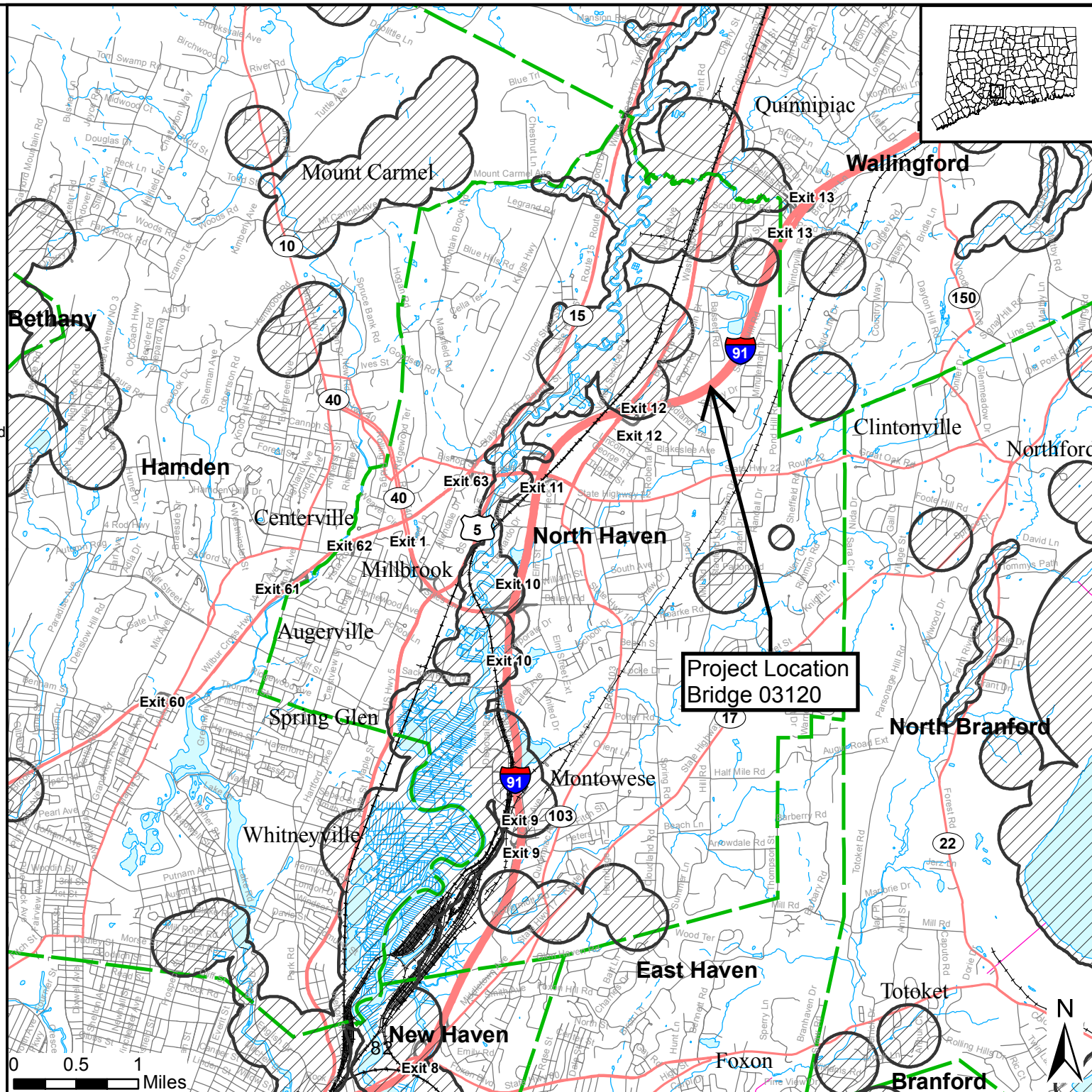
www.ct.gov/deep/nddbrequest

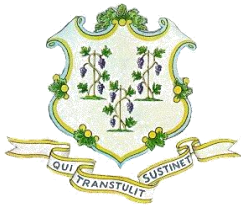
Use the CTECO Interactive Map Viewers at www.cteco.uconn.edu to more precisely search for and locate a site and to view aerial imagery with NDDB Areas.

QUESTIONS: Department of Energy and Environmental Protection (DEEP)
79 Elm St., Hartford CT 06106
Phone (860) 424-3011



Connecticut Department of
Energy & Environmental Protection
Bureau of Natural Resources
Wildlife Division





**STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION**

**2800 BERLIN TURNPIKE, P.O. BOX 317546
NEWINGTON, CONNECTICUT 06131-7546**



Phone: 860-594-3128

October 27, 2016

Subject: Project No. 100-178

Replacement of Bridge No. 03120, Bassett Road over I-91 in the Town of North Haven.

NOTICE TO CONTRACTORS:

This is to notify all concerned and especially the prospective bidders that the bid opening for the subject project has been postponed One (1) additional week to November 2, 2016 at 2:00 P.M. in the Conference Room of the Department of Transportation Administration Building, 2800 Berlin Turnpike, Newington, Connecticut.

Addendum No. 1 is attached

The Department has established a general mailbox to receive contractor questions. Please send all future questions to DOTContracts@ct.gov

Philip J. Melchionne

For: Gregory D. Straka

Contracts Manager

Division of Contracts Administration

10/26/2016
REPLACEMENT OF BRIDGE NO. 03120
BASSETT ROAD OVER I-91
FEDERAL AID PROJECT NO. 6100(007)
STATE PROJECT NO. 100-178
NORTH HAVEN

ADDENDUM NO. 1

This Addendum addresses the following questions and answers contained on the “CT DOT QUESTIONS AND ANSWERS WEBSITE FOR ADVERTISED CONSTRUCTION PROJECTS”:

Question and Answer No. 1, 9, 11, 12, 14, 15, 18, and 20

SPECIAL PROVISIONS
NEW SPECIAL PROVISION

The following Special Provision is hereby added to the Contract:

ITEM NO. 0101125A – PORTABLE TURBIDITY METER

REVISED SPECIAL PROVISION

The following Special Provisions are hereby deleted in their entirety and replaced with the attached like-named Special Provisions:

**ITEM NO. 0514271A – PRECAST CONCRETE/STEEL COMPOSITE
SUPERSTRUCTURE**

ITEM NO. 0601107A – HIGH EARLY STRENGTH CONCRETE

**ITEM NO. 0707009A – MEMBRANE WATERPROOFING (COLD LIQUID
ELASTOMERIC)**

NEW CONTRACT ITEM

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>UNIT</u>	<u>QUANTITY</u>
<u>0714050</u>	<u>TEMPORARY EARTH RETAINING SYSTEM</u>	<u>S.F.</u>	<u>1720</u>
<u>0214100</u>	<u>COMPACTED GRANULAR FILL</u>	<u>C.Y.</u>	<u>260</u>
<u>0101125A</u>	<u>PORTABLE TURBIDITY METER</u>	<u>EA.</u>	<u>1</u>

REVISED CONTRACT ITEMS

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>ORIGINAL QUANTITY</u>	<u>REVISED QUANTITY</u>
<u>0202529</u>	<u>CUT BITUMINOUS CONCRETE PAVEMENT</u>	<u>145</u>	<u>360</u>
<u>0203000</u>	<u>STRUCTURE EXCAVATION – EARTH (COMPLETE)</u>	<u>6743</u>	<u>7003</u>
<u>0212000</u>	<u>SUBBASE</u>	<u>570</u>	<u>610</u>
<u>0406170</u>	<u>HMA S1</u>	<u>375</u>	<u>400</u>
<u>0406171</u>	<u>HMA S0.5</u>	<u>724</u>	<u>749</u>
<u>0514271A</u>	<u>PRECAST CONCRETE/ STEEL COMPOSITE SUPERSTRUCTURE</u>	<u>9164</u>	<u>11232</u>
<u>0601107A</u>	<u>HIGH EARLY STRENGTH CONCRETE</u>	<u>146</u>	<u>11</u>
<u>0602006</u>	<u>DEFORMED STEEL BARS – EXPOXY COATED</u>	<u>31380</u>	<u>14940</u>
<u>0713040A</u>	<u>PERMANENT STEEL SHEET PILING</u>	<u>2615</u>	<u>4800</u>
<u>0822001A</u>	<u>TEMPORARY PRECAST CONCRETE BARRIER CURB</u>	<u>2780</u>	<u>3060</u>
<u>1205207</u>	<u>TYPE DE-7 DELINEATOR</u>	<u>30</u>	<u>44</u>
<u>1220027</u>	<u>CONSTRUCTION SIGNS</u>	<u>1451</u>	<u>1515</u>

PLANS**NEW PLAN**

The following Plan Sheet is hereby added to the Contract:

03.35-1.A1

REVISED PLANS

The following Plan Sheets are hereby deleted and replaced with the like-numbered Plan Sheets:

02.01.A1, 03.02.A1, 03.04.A1, 03.16.A1, 03.17.A1, 03.18.A1, 03.32.A1, 03.34.A1, 03.35.A1, 03.36.A1, 03.40.A1, 03.41.A1, 05.02.A1, 06.02.A1, 06.03.A1

PERMIT APPLICATIONS

The following Permit Application is hereby added to the Contract:

- **STORM WATER DISCHARGE PERMIT - APPLICATION**

The Detailed Estimate Sheet does not reflect these changes.

The Bid Proposal Form has been revised to reflect these changes.

There will be no change in the number of calendar days due to this Addendum.

The foregoing is hereby made a part of the contract.

ITEM #0101125A – PORTABLE TURBIDITY METER

Description:

Under this item, the Contractor shall be responsible for furnishing a Portable Turbidity Meter for measuring the turbidity of storm water for compliance with the State of Connecticut Department of Energy and Environmental Protection's General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities. The EPA compliant device shall be a portable meter having a 0-1000 NTU (Nephelometric Turbidity Units) range and a high accuracy at low ranges (<0.05 NTU). The meter selected shall be submitted to the Engineer for approval.

Materials:

The turbidity meter shall conform to the EPA Method 180.1 standards for testing. The portable turbidity meter shall be comparable to the Hanna Portable Turbidity Meter, HI 98703, with Fast Tracker Technology which includes five (5) sample cuvettes and caps, calibration cuvettes, silicone oil, cuvette cleaning cloth, batteries, AC adapter, instruction manual, and a rugged carrying case. The meter shall have a Tag Identification System, to verify that samples have been taken at pre-established locations during inspections and for recording multiple location sites.

Construction Methods:

The Contractor shall provide the Turbidity Meter for the Department's use of monitoring turbidity of stormwater effluent for compliance of the National Pollution Discharge Elimination System.

Method of Measurement:

This item will be measured for payment by the number of Portable Turbidity Meters of the type accepted and utilized.

Basis of Payment:

This item will be paid for at the Contract Unit Price each for "Portable Turbidity Meter", complete and in place, which price shall include all materials, tools, equipment, and labor incidental thereto.

Pay Item
Portable Turbidity Meter

Pay Unit
EA.

ITEM #0514271A – PRECAST CONCRETE/STEEL COMPOSITE SUPERSTRUCTURE

Description: Work under this item shall be in accordance with the applicable provisions of Sections 5.08, 6.01, 6.02 and 6.03, and the provisions contained herein.

This Item shall include the fabrication, delivery, temporary bracing, and installation of a Precast Concrete/Steel Composite Superstructure, consisting of joined Prefabricated Bridge Units (PBUs), including all necessary materials, labor and equipment to complete the work, as shown on the plans. The PBUs are comprised of steel beams made composite with a precast reinforced concrete deck.

The Precast Concrete/Steel Composite Superstructure also includes the deck closure pours and backwalls, as well as the concrete and reinforcing steel for closure pours and backwalls, and other appurtenances that are incidental to the PBU or projecting from the PBU such as lifting lugs, diaphragms/cross frames, bearing bolsters, and projecting reinforcing steel.

Due to the accelerated nature of this project, all PBUs shall be manufactured and accepted 2 weeks prior to the anticipated placement of the distribution slabs.

The Contractor also has the option to build the superstructure with conventional construction methods and not use PBUs, if he develops a schedule which shows that he can achieve Milestone 1 and the schedule is approved by the Engineer. Should the Contractor choose this option, all components of the superstructure from the top of the deck down shall be paid for under this item.

Materials: The materials for Prefabricated Bridge Units shall conform to the following requirements:

Structural steel materials shall conform to the requirements of Section M.06. Shear stud connectors shall conform to the requirements of Subarticle M.06.02-12. All structural steel in the superstructure, except in the bearing assemblies, shall conform to the requirements of AASHTO M270, Grade 50W. This includes the steel girders, bolsters, connection plates, and diaphragms. The sole plates shall conform to AASHTO M270 Grade 50W steel.

Class “F” Concrete shall be used for all concrete elements including, but not limited to, the bridge deck, closure pours, and backwalls. Concrete shall meet the requirements of Article M.03.01, for Class “F” Concrete” and shall have a minimum 28-day compressive strength of 4,400 psi. The use of calcium chloride or an admixture containing calcium chloride will not be permitted.

Reinforcing steel shall be epoxy coated and conform to the requirements of Article M.06.01.

Due to the accelerated nature of this project, the Contractor can utilize high early strength

concrete for backwalls and closure pours in lieu of Class “F” concrete. This shall be done at no additional cost to the State. The materials and work performed shall be in accordance with special provision for the item “High Early Strength Concrete”.

Construction Methods: If the Contractor elects to have the PBUs fabricated off-site, the Fabricator shall have an established Quality Control Management plan which is acceptable to the Engineer. If the Contractor elects to cast the deck of the PBUs on site, he shall follow the applicable sections of Form 816 as well as include his specific methods for not damaging the deck during erection of the PBUs, in his Assembly Plan.

- 1. Shop Drawings:** Prior to any fabrication, the Contractor shall submit shop drawings in accordance with Article 1.05.02-3. Multiple shop drawings may be required for the PBUs since the fabrication can take place in two separate facilities. The Contractor shall coordinate the preparation of the separate shop drawings to ensure that there are no conflicting details. Approval of the shop drawings will be required prior to the ordering of the materials and the fabrication of the prefabricated bridge units.

In addition to the standard detailing of shop drawings, the Contractor shall include the following information:

- a. The stamp of the registered Professional Engineer licensed in the State of Connecticut who has reviewed and certified the shop drawings.
 - b. All lifting inserts, hardware, or devices and locations for Engineer’s approval. All lifting devices shall be designed by the Contractor.
 - c. Locations and details of the lifting devices, including supporting calculations, type, and amount of any additional reinforcing required for lifting. All lifting devices will be designed based on the no cracking criteria in Chapter 8 of the PCI Design Handbook (Seventh Edition).
 - d. Details and methods for accommodating the dimensional requirement of each PBU accounting for profile grade and cross slope.
 - e. Methods for controlling the accumulation of dimensional tolerances through the use of working points or working lines. The width of each individual unit along with the width of the closure pour shall be determined such that, when pieces are laid together, the prefabricated bridge units shall satisfy the required bridge out-to-out width and cross slopes shown on the plans.
 - f. The minimum required compressive strength of the precast concrete deck prior to handling the prefabricated bridge units.
- 2. Assembly Plan:** The Assembly Plan is a document prepared by the Contractor and a qualified Professional Engineer with specific knowledge of the Contractor’s equipment and “means and methods” for constructing the precast elements required to complete the work on the project. The development of this Assembly Plan is closely linked to the schedule of operations and the interim material strengths necessary for the work to progress. The Contractor shall coordinate the development of the Assembly Plans with the development of

the Shop Drawings to ensure consistent detailing. For example, if additional lifting hooks, grout ports, leveling devices, etc. are required, they should be added to the shop drawings prior to approval.

The development of the Assembly Plan and Shop Drawings for the PBUs will not be measured separately for payment and should be considered incidental to this Item.

The Assembly Plan shall be considered a Working Drawing. The development and approval of the Assembly Plan shall be according to Article 1.05.02. Approval of the Assembly Plan will be required prior to the initiation of the full roadway closure.

Under no circumstances shall the fabrication of the prefabricated bridge units commence prior to the approval of the Shop Drawings and the Assembly Plan unless written permission is given by the Engineer. The Department shall reject any components fabricated before receiving written approval or components that deviate from the approved drawings. Any expenses incidental to the revision of materials furnished, in accordance with the Shop Drawings and order lists, to make them comply with the plans and specifications, including costs incurred due to faulty detailing or fabrication, shall be borne by the Contractor.

At a minimum, the Assembly Plan shall include the following information:

- a) Details and/or cut sheets of all equipment that will be employed for the assembly of the prefabricated bridge units.
- b) Details of all equipment to be used to lift the PBUs including cranes, excavators, lifting slings, sling hooks, and jacks. Crane locations, operation radii, and lifting calculations will also be included. The factors of safety for the lifting of PBUs will be achieved by using 125% of the weight of the PBU being lifted. The Contractor is responsible for determining the center of gravity for all PBUs. Special care shall be used for PBUs that are not symmetrical. These elements may require special lifting hardware to allow for installation to the grades shown on the plans.
- c) The Assembly plan shall address the potential for tension in the precast deck during shipping and handling. Allowable tension stresses in the concrete shall be according Chapter 8 of the PCI Design Handbook (seventh edition). Calculations shall be prepared for the lifting and handling in accordance with the no discernible cracking criteria. Lifting hook locations and hardware shall be coordinated with the Fabricator(s).
- d) A statement of compliance with all requirements of applicable environmental permits.
- e) A work area plan, depicting all affected utilities, drainage, and protective measures that will be employed throughout the construction activities.
- f) Full size 22"x34" sheets depicting the assembly procedures for the PBUs.
- g) A detailed schedule with the timeline for all operations. In development of the schedule the Contractor shall account for setting and cure times for concrete closure pours.

- h) Methods of adjusting and securing the elements after placement.
- i) Procedures for controlling erection tolerances for both the horizontal and vertical direction.
- j) Methods of forming closure pours.
- k) Material used for and methods for curing the closure pours. The Contractor shall include detailed description of curing materials if casting is anticipated during times when wet weather can be anticipated.
- l) Material used for the backwalls.
- m) The Assembly Plan shall be bound into one complete document and shall be prepared and stamped by a registered Professional Engineer licensed in the State of Connecticut.

- 3. Installation:** The field personnel shall have knowledge of and follow the approved Assembly Plan. If changes are warranted due to varying site conditions, resubmit the plan for review and approval.

Working points, working lines, and benchmark elevations shall be established prior to placement of all elements. The Contractor is responsible for field survey as necessary to complete the work. The District reserves the right to perform additional independent survey. This survey does not relieve the Contractor from performing survey for the construction. If discrepancies are found, the Contractor may be required to verify previous survey data.

The PBUs shall be placed in the sequence and according to the methods outlined in the Assembly Plan. The height of each element will be adjusted to acceptable tolerances by means of leveling devices or shims. The Contractor shall ensure that the PBU is in the proper horizontal and vertical location prior to releasing from the crane and setting the next unit. Vertical tolerance needs to be checked at the top surface of the PBU. Diaphragms may be used to control geometry; however if the required setting tolerance cannot be met, the Contractor may be required to adjust or fabricate new diaphragms.

4. Erection Tolerances:

- a) Plan Alignment: Location and Clearances

The Contractor shall adhere to the following tolerances for the final condition of the PBU after placement:

- i. Do not exceed 1/4 inch maximum deviation at each end of the span from overall longitudinal alignment after setting.
- ii. Do not exceed 1/4 inch maximum deviation from overall transverse location (i.e. longitudinal position) at each line of bearings.
- iii. Maximum deviation from alignment in both primary plan directions at each end of the span being set shall not exceed 1/4 inch or that required for the accommodation of manufactured expansion joint components or bearings,

whichever is the less.

- iv. In the absence of other constraints, keep individual elements or surfaces within 1/4 inch of location with respect to similar matching surfaces.

b) Bridge Bearings: Elevation and Location

The Contractor shall keep the elevation of individual bridge bearings within plus or minus 1/8 inch of required elevations. The plan location of bridge bearings shall be within a tolerance of 1/8 inch and the alignment within plus or minus 1/16 inch across the bearing.

If tolerances are not met, submit for approval of Engineer, means to adjust elevations or to correct for or accommodate errors or unintended deviations from required tolerances. Submit proposals and seek approval of the Engineer for the use of shims, injection of high strength grout or other methods to accommodate differences from required tolerance. Do likewise, for the accommodation of anchor bolts or similar restraining devices.

5. Quality Control: At a minimum, the following requirements shall be met:

- a) The reinforced concrete deck on top of the girder pairs shall be fabricated by a precast fabricator that is approved by the Department. The fabricator shall follow the Department's approved quality control procedures.
- b) The PBUs will be constructed to tolerances shown on the plans. Where tolerances are not shown, follow tolerance limits in the PCI MNL 116-99, "Manual for Quality Control for Plants and Production of Structural Precast Concrete Products, 4th Edition". Elements that are found to be out of tolerance may be subject to rejection. Rejection of the elements may be waived by the Engineer if the Contractor can demonstrate that the out of tolerance element can be installed without significant modifications to the bridge. For example, an over width element may be acceptable if the adjacent element is under width.
- c) The Contractor is required to provide field survey to determine that the PBUs are placed within the horizontal and vertical tolerances stated on the plans.
- d) The Contractor is responsible for interim testing of concrete placed in the field to allow the work to proceed with various stages of construction. For example, if the approved Assembly Plan allows for loads to be placed on the PBU after the closure pour concrete has achieved a specific compressive strength which is lower than the final design compressive strength, the Contractor will be required to test the concrete proving that the strength has been achieved. For materials used throughout the construction that have a proven strength gain at predetermined time interval, the compressive testing requirements may be waived by the Engineer. All testing furnished by the Contractor shall be performed by an AASHTO accredited laboratory. All Quality Control test results shall be submitted to the Division of Materials Testing section for approval. Additional testing by the Contractor will be

- performed at no additional cost and will not be measured for payment. Final acceptance testing of concrete shall be in accordance with Article 6.01.03.
- e) The fabricator and Contractor shall prevent cracking or damage of the PBUs during handling, storage, transportation, and final installation in permanent position.
 - f) If damage occurs, replace defects and breakage of the PBUs in accordance with the following:
 - i. Members that sustain damage or surface defects during fabrication, handling, storage, hauling, or erection are subject to review or rejection.
 - ii. Approval must be obtained before performing repairs.
 - iii. Repair work must re-establish the elements' structural integrity, durability, and aesthetics to the satisfaction of the Engineer.
 - iv. Determine the cause when damage occurs and take corrective action.
 - v. Failure to take corrective action, leading to similar repetitive damage, can be cause for rejection of the damaged element.
 - vi. Cracks that extend to the nearest reinforcement plane and fine surface cracks that do not extend to the nearest reinforcement plane but are numerous or extensive are subject to review and rejection.
 - g) The plant will document all test results. The quality control file will contain at least the following information:
 - i. Element identification
 - ii. Date and time of casting
 - iii. Concrete cylinder test results
 - iv. Quantity of used concrete and the batch printout
 - v. Form-stripping date and repairs if applicable
 - vi. Location/number of blockouts and lifting inserts
 - vii. Temperature and moisture of curing period
 - viii. Document lifting device details, requirements, and inserts
- 6. Marking:** Permanently mark each prefabricated bridge unit with the date of casting and supplier identification. Stamp markings in fresh concrete.
- 7. Handling and Storage:** Materials for this work shall be stored off the ground before, during, and after fabrication. The PBUs shall be kept free from dirt, grease and other contaminants and shall be reasonably protected from corrosion. Care shall be taken during storage, transporting, hoisting and handling of all prefabricated units to prevent damage. Units damaged by improper storing, transporting or handling shall be repaired or replaced by the Contractor, as directed by the Engineer and at no cost to the State. All storage and handling operations shall be as directed by the Engineer.

- 8. Special Considerations:** Regardless of whether the Contractor chooses to fabricate the PBUs on site or off site, the PBUs must be fabricated in the same orientation as they will be in their final location on the substructure. This means that all steel girders and cross frames must be assembled on the temporary supports and all deck formwork must be in place and be continuous between girders prior to placing the concrete for the deck. When the deck concrete is placed, it shall be placed across the full width of the deck (excluding the areas of the closure pours) in a continuous operation
- 9. Conventional Construction Option:** If the Contractor elects to build the superstructure without the use of PBUs, the construction methods shall be in accordance with the requirements of the applicable sections of Form 816 and the special provisions.

Method of Measurement: This work will be measured for payment by the actual area of the bridge deck fabricated and accepted in its final location. The area of bridge deck shall be calculated using the measured length from back face of backwall to back face of backwall and the measured width from outside fascia to outside fascia of the concrete deck. Measurements will be made across the top (horizontal) surface of the concrete deck without deduction for closure pours, if used. There will be no measurement for payment of any vertical face along the backwall or PBU.

Structural steel, concrete and reinforcing steel for deck, backwalls and closure pours, reinforcing bar extensions projecting from PBU's, bearing bolsters, transportation, erection, and installation of PBU's will not be measured separately for payment, regardless of the option used for construction.

Basis of Payment: This work will be paid for at the contract unit price per square foot for "Precast Concrete/Steel Composite Superstructure", complete and in place accepted. The price shall include all tools, material, equipment, labor and work incidental to the construction.

Payment for work and materials described above or as noted on the plans or as ordered by the Engineer being incidental to the construction of the PBUs, closure pours and backwalls shall be included in the unit price for this item.

<u>Pay Item</u>	<u>Pay Unit</u>
Precast Concrete/Steel Composite Superstructure	S.F.

ITEM 0601107A – HIGH EARLY STRENGTH CONCRETE

Work under this item shall conform to Section 6.01 Concrete for Structures as supplemented and amended herein to provide for High Early Strength Concrete.

6.01.01 – Description: Add the following

High early strength concrete may be used to accelerate the construction of the bridge. The goal of this work is:

- Meet the required compressive strength (both interim and final) in an accelerated manner.
- Reduce the cure time for the concrete
- Provide durable (low permeability) concrete
- Provide low shrinkage properties to reduce cracking in the field

The Contractor shall develop a high early strength concrete mix design for use as indicated on the plans or as ordered by the Engineer.

6.01.02 – Materials: Add the following:

The high early strength concrete shall conform to the requirements of M.03.01 and the following criteria:

1. Portland cement shall be Type II, IIA or III conforming to AASHTO M85 or M240, as appropriate.
2. All cement used in the manufacture of the members shall be the same brand, type and color, unless otherwise permitted.
3. Use Portland cement conforming to AASHTO M85 with compatible admixtures and air entraining agent.
4. Water-cementitious material ratio shall not exceed 0.4 by weight, including water in the admixture solution and based on saturated surface dry condition of aggregates.
5. Use a maximum size coarse aggregate of $\frac{3}{4}$ ".
6. The amount of entrained air shall be 6.0 +/- 1.5%.
7. High early strength concrete shall achieve its required compressive strength sooner than 28-days.
8. The early strength characteristics of the concrete shall be commensurate with the intended construction procedure that is developed by the Contractor in the Assembly Plan.
9. A shrinkage reducing admixture shall be added to the concrete mix according to the manufacturer's recommendation such that there will be no cracks at 14 days in the sample tested in AASHTO T334 (see below). A shrinkage reducing admixture shall be tested by an approved testing lab and meet the requirements of ASTM C494-10 Type S, except that in Table 1 length change shall be measured as: Length Change (percent of control) shall be a minimum of 35% less than that of the control. Table 1 Length Change (increase over control) shall not apply. Shrinkage reducing admixtures shall not contain expansive metallic materials.
10. The maximum allowable total chloride content in concrete shall not exceed 0.1% by

weight of cement.

Mix Design Requirements

Concrete shall be controlled, mixed, and handled as specified in the pertinent portions of Section 6.01 Concrete for Structures, Supplemental Specifications and as indicated below:

The Contractor shall design and submit for approval the proportions and test results for a concrete mix which shall attain the minimum final design compressive strength and the early compressive strength as defined by the approved Assembly Plan and consistent with the approved Quality Control Plan.

The concrete mix design shall have a rapid chloride ion permeability of 2000 Coulombs at not more than 28 days using AASHTO T 277 and the air entrainment shall be targeted at a value of 6.5 percent +/-1.5 percent. Contractor may opt to take multiple tests prior to 28 days which will be considered accepted once the target value of 2,000 coulombs is reached. Testing shall be in accordance with AASHTO T 119 and T 152. Multiple samples should be tested using the intended curing methods in order to establish the required cure times for the mix.

Should a change in sources of material be made, a new mix design shall be established and approved prior to incorporating the new material. When unsatisfactory results or other conditions make it necessary, the Department will require a new mix design.

The concrete mix design shall be submitted to the Department for review and approval. The Department shall be notified at least 48 hours prior to the test batching and shall be present to witness the testing.

All tests necessary to demonstrate the adequacy of the concrete mix shall be performed by the Contractor, witnessed by the Department, including, but not limited to: slump, air content, temperature, initial set and final set (AASHTO T197). Compressive strength tests shall be determined on field cured cylinders (6" X 12" cylinders) at 9 hours, 12 hours, 15 hours, 18 hours, 24 hours, 30 hours, 36 hours, 42 hours, 2 days and 3 days, and standard cured cylinders at 7 days and 28 days. Additionally, a confined shrinkage test as outlined in the AASHTO T334 - Practice for Estimating the Crack Tendency of Concrete shall be performed by an AASHTO accredited laboratory. The results of these tests (documenting zero cracks at 14 days) shall be submitted to the Department.

Field Trial Placement

In addition, a trial placement shall be done a minimum of (90) ninety days before the intended date of the initial closure pour placement. The Contractor will be required to demonstrate proper mix design, batching, placement, finishing and curing of the high early strength concrete. The trial placement shall simulate the actual job conditions in all respects including plant conditions, transit equipment, travel conditions, admixtures, forming, the use of bonding compounds, restraint of adjacent concrete, placement equipment, and personnel.

The trial shall also demonstrate the ability of the concrete to accept the installation of the

membrane waterproofing system that is to be used. A representative portion of the trial concrete shall be coated with the membrane waterproofing in accordance with the specifications for the waterproofing. The timing of the installation of the waterproofing on the trial concrete shall be commensurate with the intended construction procedure and schedule that is developed by the Contractor. The Contractor shall demonstrate that the waterproofing meets all the requirements of the specifications.

The details for the trial placement configuration are shown in Figure 1. Acceptance criteria for the trial placement shall be as follows:

- The trial placement concrete shall not exhibit cracking or separation from the test panel in excess of 0.016 inches wide
- There shall be no more than one transverse crack in excess of 0.010 inches wide in the 10 foot long pour.
- The evaluation of the trial placement shall take place 14 days after placement.

If the trial placement fails these criteria, the Contractor will be required to submit a corrective action plan on how repairs of these crack sizes will be performed. The Department may require the Contractor to conduct more trial batches and trial placements. The costs of trial batches, trial placements and the removal of trial placement concrete from the job site is incidental to the work and will not be measured for payment. The requirement for multiple test placements shall not be cause for a time extension.

The final accepted trial placement testing shall be used to establish the final acceptance testing protocol for the field placements.

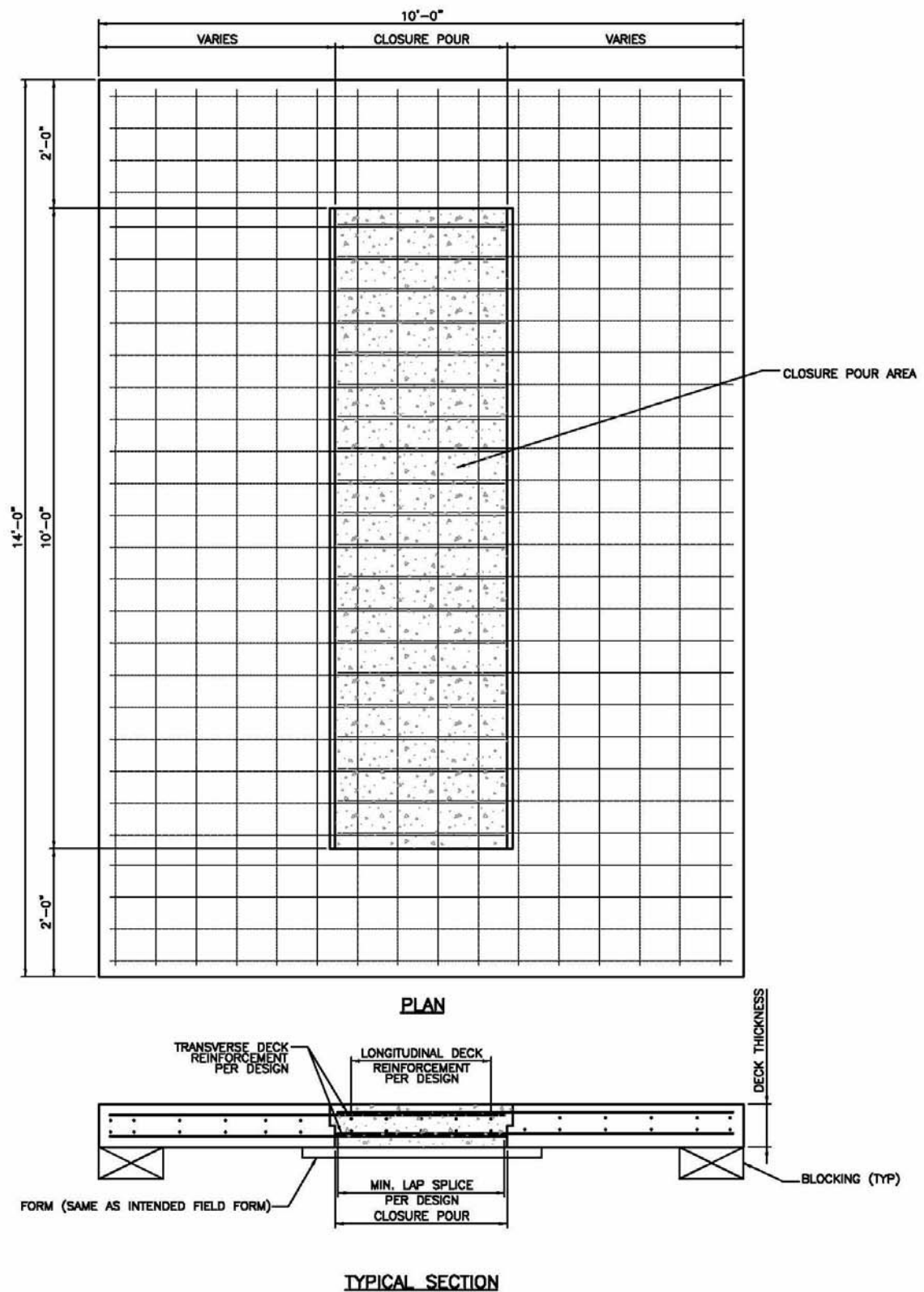


FIGURE 1 - TRIAL PLACEMENT TEST SET-UP

6.01.03 Construction Methods: Add the following:

The Contractor shall engage an AASHTO accredited laboratory to provide testing facilities which are qualified laboratories under the NETTCP program to perform all Quality Control field testing. All personnel performing tests shall be qualified NETTCP Concrete Technicians and certified ACI Laboratory and Concrete Strength Technicians. Anytime the Contractor moves the laboratory, all associated equipment shall be recalibrated. This requirement is intended to minimize the movement of test cylinders.

The Contractor is required to perform initial set and final set tests (AASHTO T197) in addition to slump, air content and temperature on concrete from each concrete truck used in the placing of this High Early Strength Concrete. Field cured cylinders (6" X 12" cylinders) will be made from the first and last concrete trucks. A set of three (3) field- cured cylinders shall be made for each informational test associated with early structural loading. The Contractor is advised to fabricate adequate sets of cylinders to allow multiple tests to verify field concrete strength. The Department shall be allowed to witness the test and comment on all the tests performed by the Contractor. The Contractor shall not open the roadway to traffic until the final strength has been met and when the Department has directed that the roadway can be opened to traffic.

All testing and equipment shall conform to AASHTO T-22, and the making and curing of concrete cylinders shall conform to AASHTO T23. All costs associated with the on-site mobile testing facilities, personnel and field testing, equipment calibration and verification to demonstrate the field concrete strength shall be incidental to the work.

Acceptance tests will be performed by the Department on standard cured cylinders at 7 days and 28 days. Cylinder breaks at 3 days and 7 days must be at least 10% above the approved trial batch results. The Contractor will be notified of any verification tests that do not meet these requirements and will be required to develop a contingency corrective action plan in case final strength is not achieved. Concrete will be accepted based on meeting the 28-day strength requirement of 4000 psi.

Curing Methods

The concrete curing methods shall be developed by the Contractor as part of the Quality Control Plan. The curing methods used in the production placements shall be the same as the curing methods used for the trial placement.

High Early Strength Concrete Crack Inspection

The Contractor shall inspect the finished high early strength concrete surface for cracks. Inspection for cracking within the distribution slab closure pour shall be completed prior to the erection of Prefabricated Bridge Units. Inspection for cracking within deck closure pours and backwalls shall be completed prior to the preparation of the deck for placement of the membrane waterproofing system, if high early strength concrete is used for these components.

The Contractor shall document the location and frequency of cracks (number of cracks per square foot) and submit to the Engineer for review. Cracks greater than 0.016 inches in width or as ordered by the Engineer shall be repaired at no additional cost to the State.

Method of Measurement: Add the following:

If high early strength concrete is used for the deck closure pours between Prefabricated Bridge Units or for the backwalls, it shall not be measured for payment under this item.

Basis of Payment: Add the following

The work completed under this Item will be paid for at the contract price per actual number of cubic yards of high early strength concrete completed in place and accepted. Payment under this Item includes full compensation for all testing and approval of the mix design.

Pay Item

Pay Unit

High Early Strength Concrete

C.Y.

ITEM #0707009A – MEMBRANE WATERPROOFING (COLD LIQUID ELASTOMERIC)

Description: Work under this item consists of furnishing and installing a seamless elastomeric waterproofing membrane system applied to a concrete or steel surface as shown on the plans, in accordance with this specification and as directed by the Engineer. Work shall also include conditioning of the surface to be coated and all quality-control testing noted herein.

The completed membrane system shall be comprised of a primer coat followed by the membrane coating which is applied in one or two layers for a minimum total thickness of 80 mil (2 mm), an additional 40 mil (1mm) membrane layer with aggregate broadcast into the material while still wet, and a bond coat of bitumen-based adhesive material.

Materials: The Contractor shall select a waterproofing membrane system from the Department's current Qualified Product List (QPL) for Spray-Applied Membrane Waterproofing System. All materials incorporated in the works shall meet the Manufacturer's specification for the chosen system. The Engineer will reject any system that is not on the QPL.

Materials Certificate: The Contractor shall submit to the Engineer a Materials Certificate for the primer and membrane and bond coat material in accordance with the requirements of Article 1.06.07.

Construction Methods: At least ten days prior to installation of the membrane system, the Contractor shall submit to the Engineer, the manufacturer's recommended procedure for preparing the deck surface, pre-treatment or preparing at cracks and gaps, treatment at curbs, vertical surfaces or discontinuities, applying the primer and membrane, and placing of aggregated coat. Procedures shall also include recommended repairs of system non-compliant issues identified during application. The system shall be applied to the prepared area(s) as defined in the plans strictly in accordance with the Manufacturer's recommendations.

A technical representative, in the direct employ of the manufacturer, shall be present on-site immediately prior to and during application of the membrane. The representative shall inspect and approve the surface prior to priming, and provide guidance on the handling, mixing and addition of components and observe application of the primer and membrane. The representative shall perform all required quality-control testing and remain on the Project site until the membrane has fully cured.

All quality-control testing, including verbal direction or observations on the day of the installation, shall be recorded and submitted to the Engineer for inclusion in the Project's records. A submittal of the quality-control testing data shall be received by project personnel prior to any paving over the finished membrane or within 24 hours following completion of any staged portion of the work.

1. **Applicator Approval:** The Contractor's membrane Applicator shall be fully trained and licensed by the membrane manufacturer and shall have successfully completed at least three spray membrane projects in the past five years. The Contractor shall furnish references from those projects, including names of contact persons and the names, addresses and phone numbers of persons who supervised the projects. This information shall be submitted to the Engineer prior to the start of construction. The Engineer shall have sole authority to determine the adequacy and compliance of the submitted information. Inadequate proof of ability to perform the work will be grounds to reject proposed applicators.

2. **Job Conditions:**

(a) **Environmental Requirements:** Air and substrate temperatures shall be between 32°F (0°C) and 104°F (40°C) providing the substrate is above the dew point. Outside of this range, the Manufacturer shall be consulted.

The Applicator shall be provided with adequate disposal facilities for non hazardous waste generated during installation of the membrane system. The applicator shall follow safety instructions regarding respirators and safety equipment.

(b) **Safety Requirements:** All open flames and spark producing equipment shall be removed from the work area prior to commencement of application.

"No Smoking" signs shall be visibly posted at the job site during application of the membrane waterproofing.

Personnel not involved in membrane application shall be kept out of the work area.

3. **Delivery, Storage and Handling:**

(a) **Packaging and Shipping:** All components of the membrane system shall be delivered to the site in the Manufacturer's packaging, clearly identified with the products type and batch number.

(b) **Storage and Protection:** The Applicator shall be provided with a storage area for all components. The area shall be cool, dry and out of direct sunlight and shall be in accordance with the Manufacturer's recommendations and relevant health and safety regulations.

Copies of Material Safety Data Sheets (MSDS) for all components shall be kept on site for review by the Engineer or other personnel.

(c) **Shelf Life - Membrane Components:** Packaging of all membrane components shall include a shelf life date sealed by the Manufacturer. No membrane components whose shelf life has expired shall be used.

4. Surface Preparation:

- (a) Protection: The Applicator shall be responsible for the protection of equipment and adjacent areas from over spray or other contamination. Parapets and bridge joints shall be masked prior to application of the materials.
- (b) Surface Preparation: Sharp peaks and discontinuities shall be ground smooth. The surface profile of the prepared substrate is not to exceed 1/4 inch (6 mm) (peak to valley) and areas of minor surface deterioration of 1/2 inch (13 mm) and greater in depth shall also be repaired. The extent and location of the surface patches require the approval of the Engineer before the membrane system is applied.

Surfaces shall be free of oil, grease, curing compounds, loose particles, moss, algae, growth, laitance, friable matter, dirt, bituminous products, and previous waterproofing materials. If required, degreasing shall be done by detergent washing in accordance with ASTM D4258.

The surface shall be abrasively cleaned, in accordance with ASTM D4259, to provide a sound substrate free from laitance.

Voids, honeycombed areas, and blow holes on vertical surfaces shall be repaired in the same manner.

All steel components to receive membrane waterproofing shall be blast cleaned in accordance with SSPC SP6 and coated with the membrane waterproofing system within the same work shift.

5. Inspection and Testing: Prior to priming of the surface, the Engineer, Applicator and Manufacturer's technical representative shall inspect and approve the prepared substrate.

- (a) Random tests for deck moisture content shall be conducted on the substrate by the Applicator at the job site using a "Sovereign Portable Electronic Moisture Master Meter," a "Tramex CMEXpertII Concrete Moisture Meter" or approved equal. The minimum frequency shall be one test per 1000 s.f. (100 sq.m) but not less than three tests per day per bridge. Additional tests may be required if atmospheric conditions change and retest of the substrate moisture content is warranted.

The membrane system shall not be installed on substrate with a moisture content greater than that recommended by the system's manufacturer, but shall not be greater than 6%, whichever is less.

- (b) Random tests for adequate tensile bond strength shall be conducted on the substrate using an adhesion tester in accordance with the requirements of ASTM D4541. The

minimum frequency shall be one test per 5,000 s.f. (500 sq.m) but not less than three adhesion tests per bridge.

Adequate surface preparation will be indicated by tensile bond strengths of primer to the substrate greater than or equal to 150 psi (1.0 MPa) or failure in a concrete surface and greater than or equal to 300 psi (2.1 MPa) for steel surfaces.

If the tensile bond strength is lower than the minimum specified, the Engineer may request additional substrate preparation. Any primer not adequately applied shall be removed and a new primer applied at the Contractor's expense, as directed by Engineer.

- (c) Cracks and grouted joints shall be treated in accordance with the Manufacturer's recommendations, as approved or directed by the Engineer.

6. Application:

- (a) The System shall be applied in four distinct steps as follows:
 - 1) Substrate preparation and gap/joint bridging preparation
 - 2) Priming
 - 3) Membrane application
 - 4) Membrane with aggregate
- (b) Immediately prior to the application of any components of the System, the surface shall be dry (see Section 5a of this specification) and any remaining dust or loose particles shall be removed using clean, dry oil-free compressed air or industrial vacuum.
- (c) Where the area to be treated is bound by a vertical surface (e.g. curb or wall), the membrane system may be continued up the vertical, as shown on the plans or as directed by the Engineer.
- (d) The handling, mixing and addition of components shall be performed in a safe manner to achieve the desired results, in accordance with the Manufacturer's recommendations or as approved or directed by the Engineer.
- (e) A neat finish with well defined boundaries and straight edges shall be provided by the Applicator.
- (f) Primer: The primer shall consist of one coat with an overall coverage rate of 125 to 175 s.f./gal (3.0 to 4.3sq.m/1) unless otherwise recommended in the manufacturer's written instructions.

All components shall be measured and mixed in accordance with the Manufacturer's recommendations.

The primer shall be spray applied using a single component spray system approved for use by the Manufacturer. If required by site conditions and allowed by the manufacturer, brush or roller application will be allowed.

The primer shall be allowed to cure tack-free for a minimum of 30 minutes or as required by the Manufacturer's instructions, whichever time is greater, prior to application of the first lift of waterproofing membrane.

Porous concrete (brick) may require a second coat of primer should the first coat be absorbed.

- (g) Membrane: The waterproofing membrane shall consist of one or two coats for a total dry film thickness of 80 mils (2 mm). If applied in two coats, the second coat shall be of a contrasting color to aid in quality assurance and inspection.

The membrane shall be comprised of Components A and B and a hardener powder which is to be added to Component B in accordance with the Manufacturer's recommendations.

The substrate shall be coated in a methodical manner.

Thickness checks: For each layer, checks for wet film thickness using a gauge pin or standard comb-type thickness gauge shall be carried out typically once every 100 s.f. (9 sq.m). Where rapid set time of the membrane does not allow for wet film thickness checks, ultrasonic testing (steel surfaces only), calibrated point-penetrating (destructive) testing, in-situ sampling (cutout of small sections for measuring thicknesses), or other methods approved by the Engineer shall be employed for determination of dry film thickness. The measured thickness of each and every individual test of the membrane shall be greater than or equal to the required thickness.

Bond Strength: Random tests for adequate tensile bond strength shall be conducted on the membrane in accordance with the requirements of ASTM D4541. The minimum test frequency shall be one test per 5,000 s.f. (500 sq.m) but no less than three adhesion tests per bridge. Adequate adhesion will be indicated by tensile bond strengths of the membrane to the substrate of greater than or equal to 150 psi (0.7 MPa) or failure in a concrete surface and greater than or equal to 300 psi (2.1 MPa) for steel surfaces.

Spark Testing: Following application of the membrane, test for pin holes in the cured membrane system over the entire application area in accordance with ASTM D4787- "Continuity Verification of Liquid or Sheet Linings Applied to Concrete Substrates." Conduct the test at voltages recommended by the manufacturer to prevent damage to the membrane.

Repair the membrane system following destructive testing and correct any deficiencies in the membrane system or substrate noted during quality-control testing in accordance with the manufacturer's recommendations to the satisfaction of the Engineer at no additional cost to the State.

- (h) Repairs: If an area is left untreated or the membrane becomes damaged, a patch repair shall be carried out to restore the integrity of the system. The damaged areas shall be cut back to sound materials and wiped with solvent (e.g. acetone) up to a width of at least four inches (100 mm) on the periphery, removing any contaminants unless otherwise recommended by the manufacturer. The substrate shall be primed as necessary, followed by the membrane. A continuous layer shall be obtained over the substrate with a four inches (100 mm) overlap onto existing membrane.

Where the membrane is to be joined to existing cured material, the new application shall overlap the existing by at least four inches (100 mm). Cleaning and surface preparation on areas to be lapped shall be as recommended in the manufacturer's written instructions.

- (i) Aggregated Finish:
 - 1) Apply an additional 40 mil (1 mm) thick layer of the membrane material immediately followed by an aggregate coating, before the membrane cures, at a rate to fully cover the exposed area. The membrane and aggregate shall be fully integrated after the aggregate has been applied and the membrane cured.
 - 2) Localized areas not fully coated shall be touched-up with additional membrane and aggregate as needed.
 - 3) Remove loose and excess aggregate from the surface to the satisfaction of the Engineer and dispose of properly after application prior to allowing traffic onto finished surface or application of tack coat.
- (j) Bond Coat:
Prior to application of a bituminous concrete overlay, the aggregated finish shall be coated with a bonding material. The bonding material shall be per the membrane waterproofing manufacturer's recommendations.

7. Final Review: The Engineer and the Applicator shall jointly review the area(s) over which the completed System has been installed. Any irregularities or other items that do not meet the requirements of the Engineer shall be addressed at this time.

Method of Measurement: The quantity to be paid for under this item shall be the number of square yards (square meters) of waterproofed surface completed and accepted.

Basis of Payment: This item will be paid for at the contract unit price per square yard (square meter) of “Membrane Waterproofing (Cold Liquid Elastomeric),” complete in place, which price shall include all surface preparation, furnishing, storing and applying the system, technical representative and quality control tests, and any necessary repairs and remediation work as well as all materials, equipment, tools, labor incidental to this work.

<u>Pay Item</u>	<u>Pay Unit</u>
Membrane Waterproofing (Cold Liquid Elastomeric)	s.y. (sq.m)



Connecticut Department of
Energy & Environmental Protection
Bureau of Materials Management & Compliance Assurance
Water Permitting & Enforcement Division

General Permit Registration Form for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities, effective 10/1/13 (electronic form)

Prior to completing this form, you **must** read the instructions for the subject general permit at [DEEP-WPED-INST-015](#). This form must be filled out electronically before being printed. You must submit the registration fee along with this form.

The [status of your registration](#) can be checked on the DEEP's ezFile. Portal. Please note that DEEP will no longer mail certificates of registration.

Part I: Registration Type

Select the appropriate boxes identifying the registration type and registration deadline.

CPPU USE ONLY

App #: _____

Doc #: _____

Check #: _____

Program: Stormwater

Registration Type		Registration Timeline
<input type="checkbox"/>	Re-registration Existing Permit No. GSN _____	On or before February 1, 2014* *Note: Failure to renew a permit by this date will require submission of new registration. Re-registrants must only complete Parts I, II, III, IV - Question 1, VII and submit Attachment A.
<input checked="" type="checkbox"/>	New Registration (Refer to Section 2 of the permit for definitions of Locally Exempt and Locally Approvable Projects)	<input type="checkbox"/> Locally Approvable Size of soil disturbance: _____
		<input checked="" type="checkbox"/> Locally Exempt Size of soil disturbance: 3.84
		<input type="checkbox"/>
		New registration - Sixty (60) days prior to the initiation of the construction activity for: For sites with a total soil disturbance area of 5 or more acres
		<input checked="" type="checkbox"/> New registration - Sixty (60) days prior to the initiation of the construction activity for: Sites with a total disturbance area of one (1) to twenty (20) acres except those with discharges to impaired waters or tidal wetlands
		<input type="checkbox"/> New registration - Ninety (90) days prior to the initiation of the construction activity for: (i) Sites with a total soil disturbance area greater than twenty (20) acres, or (ii) Sites discharging to a tidal wetland (that is not fresh-tidal and is located within 500 feet), or (iii) Sites discharging to the impaired water listed in the "Impaired Waters Table for Construction Stormwater Discharges"

Part II: Fee Information

1. New Registrations

a. Locally approvable projects (registration only):

☐ \$625

b. Locally exempt projects (registration and Plan):

☒ \$3,000 total soil disturbance area \geq one (1) and < twenty (20) acres.

☐ \$4,000 total soil disturbance \geq twenty (20) acres and < fifty (50) acres.

☐ \$5,000 total soil disturbance \geq fifty (50) acres.

2. Re-Registrations

☐ \$625 (sites previously registered prior to September 1, 2012)

☐ \$0 (sites previously registered between to September 1, 2012 and effective date of this permit)

Total Fee: \$3,000.00

The fees for municipalities shall be half of those indicated in subsections (a), (b) and (c) above pursuant to Section 22a-6(b) of the Connecticut General Statutes. State and Federal agencies shall pay the full fees specified in this subsection. The registration will not be processed without the fee. The fee shall be non-refundable and shall be paid by certified check or money order payable to the Department of Energy and Environmental Protection.

Part III: Registrant Information

- If a registrant is a corporation, limited liability company, limited partnership, limited liability partnership, or a statutory trust, it must be registered with the Secretary of the State. If applicable, the registrant's name shall be stated **exactly** as it is registered with the Secretary of the State. This information can be accessed at [CONCORD](#)
- If a registrant is an individual, provide the legal name (include suffix) in the following format: First Name; Middle Initial; Last Name; Suffix (Jr, Sr., II, III, etc.).

1. Registrant /Client Name: <u>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</u>	
Registrant Type: <u>State Agency</u>	
Secretary of the State business ID #: _____	
Mailing Address: <u>140 Pond Lily Ave</u>	
City/Town: <u>New Haven</u>	State: <u>CT</u> Zip Code: <u>06515</u>
Business Phone: <u>(203) 389-3100</u>	ext.: _____
<i>Example:(xxx) xxx-xxxx</i>	
Contact Person: <u>Domenic LaRosa</u>	Title : <u>District III Engineer</u>
E-Mail: <u>domenic.larosa@ct.gov</u>	
2. List billing contact:	
Name: <u>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</u>	
Mailing Address: <u>140 Pond Lily Ave</u>	
City/Town: <u>New Haven</u>	State: <u>CT</u> Zip Code: <u>06515</u>
Business Phone: <u>(203) 389-3100</u>	ext.: _____
Contact Person: <u>Domenic LaRosa</u>	Title : <u>District III Engineer</u>

3. List primary contact for departmental correspondence and inquiries:

Name: STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION

Mailing Address: 140 Pond Lily Ave

City/Town: New Haven

State: CT

Zip Code: 06515

Business Phone: (203) 389-3100

ext.

Contact Person: Domenic LaRosa

Title: District III Engineer

4. List owner of the property on which the activity will take place:

Name: STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION

Mailing Address: 140 Pond Lily Ave

City/Town: New Haven

State: CT

Zip Code: 06515

Business Phone: (203) 389-3100

ext.

Contact Person: Domenic LaRosa

5. List preparer:

Name: CME ASSOCIATES, INC.

Mailing Address: 333 E River Dr

City/Town: East Hartford

State: CT

Zip Code: 06108

Business Phone: (860) 290-4100

ext.

Contact Person: CHARLES EATON

Title:

6. List design professional:

Name: CME ASSOCIATES, INC.

Mailing Address: 333 E River Dr

City/Town: East Hartford

State: CT

Zip Code: 06108

Business Phone: (860) 290-4100

ext.

Contact Person: CHARLES EATON

Title:

7. List Reviewing Qualified Professional (for locally approvable projects only):

Name:

Mailing Address:

City/Town:

State:

Zip Code:

Business Phone:

ext.

Contact Person:

Title:

Part IV: Site Information

1. Site Name: Replacement of Bridge 03120 100-178

Street Address or Description of Location: 171 Bassett Rd

City/Town: North Haven Town of

State: CT

Zip Code: 06473

Brief Description of construction activity:

Replacement of Bridge 03120 Bassett Road over I-91

Project Start Date: 3 Apr 2017

Anticipated Completion Date: 30 Nov 2017

Normal working hours: 8 to 4

2. **MINING** : Is the activity on the site in question part of mining operations (i.e. sand and gravel)? ☐ Yes ☒ No

If yes, mining is not authorized by this general permit. You must submit the Registration Form for the General Permit for the Discharge of Stormwater Associated with Industrial Activity.

3. **COMBINED OR SANITARY SEWER**: Does all of the stormwater from the proposed activity discharge to a combined or sanitary sewer (i.e. a sewage treatment plant)? ☐ Yes ☒ No

If yes, this activity is not regulated by this permit. Contact the Water Permitting & Enforcement Division at 860-424-3018.

4. **INDIAN LANDS**: Is or will the facility be located on federally recognized Indian lands? ☐ Yes ☒ No

5. **COASTAL BOUNDARY**: Is the activity which is the subject of this registration located

within the coastal boundary as delineated on DEEP approved coastal boundary maps? ☐ Yes ☒ No

The coastal boundaries fall within the following towns: Branford, Bridgeport, Chester, Clinton, Darien, Deep River, East Haven, East Lyme, Essex, Fairfield, Greenwich, Groton (City and Town), Old Lyme, Guilford, Hamden, Ledyard, Lyme, Madison, Milford, Montville, New London, New Haven, North Haven, Norwalk, Norwich, Old Saybrook, Orange, Preston, Shelton, Stamford, Stonington (Borough and Town), Stratford, Waterford, West Haven, Westbrook and Westport.

If "yes", and this registration is for a new authorization or a modification of an existing authorization where the physical footprint of the subject activity is modified, you must provide documentation to the DEEP Office of Long Island Sound Programs or the local governing authority has issued a coastal site plan approval or determined the project is exempt from coastal site plan review. Provide this documentation with your registration as Attachment B. See guidance in Appendix D of the general permit. Information on the coastal boundary is available at the local town hall or on the [Connecticut Coastal Resources Map](#) . Additional DEEP Maps and Publications are available by contacting DEEP Staff at 860-424-3555.

6. **ENDANGERED OR THREATENED SPECIES**:

In order to be eligible to register for this General permit, each registrant must either perform a self-assessment, obtain a limited one-year determination, or obtain a safe-harbor determination regarding threatened and endangered species. This may include the need to develop and implement a mitigation plan. While each alternative has different limitations, the alternatives are not mutually exclusive; a registrant may register for this General Permit using more than one alternative, See Appendix A of the general Permit. Each registrant must complete this AND Attachment C to this Registration form and a registrant who does not or cannot do so is not eligible to register under this General Permit.

Each registration must perform a review of the Department's Natural Diversity Database maps to determine if the site of the construction activity is located within or in proximity (within ¼ mile) to a shaded area.

- a. Provide the date of the NDDDB maps were reviewed: 26 Sep 2016 (Print a copy of the NDDDB map you viewed since it must be submitted with this registration as part of Attachment C.)

- b. For a registrant using a limited one-year determination or safe harbor determination to register for this General Permit, provide the Department's Wildlife Division NDDB identification number for any such determination:

_____ (The number is on the determination issued by the Department's Wildlife Division).

For more information on threatened and endangered species requirements, refer to Appendix A and section 3(b)(2) of this General Permit, Visit the DEEP website at [Natural Diversity Data Base](#) or call the NDDB at 860-424-3011.

- c. I verify that I have completed Attachment C to this Registration Form. ☐ Yes

7. **WILD AND SCENIC RIVERS:** Is the proposed project within the watershed of a designated

Wild and Scenic River? (See Appendix H for guidance) ☐ Yes ☒ No

8. **AQUIFER PROTECTION AREAS:** Is the site located within a mapped

[Aquifer Protection Area](#) , as defined in Section 22a-354h of the CT General Statutes?

(For additional guidance, please refer to Appendix C of the General Permit) ☐ Yes ☒ No

9. **Connecticut Guidelines for Soil Erosion and Sediment Control Guidelines:** Is the activity in accordance with Connecticut Guidelines for Soil Erosion and Sediment Control Guidelines and local erosion & sediment control ordinances, where applicable? ☒ Yes ☐ No

10. HISTORIC AND/OR ARCHAEOLOGICAL RESOURCES:

Has the site of the proposed activity been reviewed (using the process outlined in Appendix G of this permit) for historic and/or archaeological resources? ☒ Yes ☐ No

- a. The review indicates the proposed site does not have the potential for historic/ archaeological resources, OR

☒ Yes ☐ No

- b. The review indicated historic and/ or archaeological resource potential exists and the proposed activity is being or has been reviewed by the Offices of Culture and Tourism, OR

☐ NA ☐ Yes ☒ No

- c. The proposed activity has been reviewed and authorized under an Army Corps of Engineers Section 404 wetland permit.

☐ NA ☐ Yes ☒ No

11. CONSERVATION OR PRESERVATION RESTRICTION:

Is the property subject to a conservation or preservation restriction? ☐ Yes ☒ No

If Yes, proof of written notice of this registration to the holder of such restriction or a letter from the holder of such restriction verifying this registration is in compliance with the terms of the restriction, must be submitted as Attachment D.

Part V: Stormwater Discharge Information

Table 1

Outfall #	a) Type	b) Pipe Material	c) Pipe Size	d) Note: To find lat/long, go to: CT ECHO . A decimal format is required here. Directions on how to use CT ECHO to find lat./long. and conversions can be found in in Part V, section d of the DEEP-WPED-INST-015 .		e) What method was used to obtain your latitude/longitude information?
EO-1	Pipe	Metal	15"	-72.838274	41.401968	ezFile Portal Map
EO-2	Pipe	Metal	15"	-72.838274	41.401968	ezFile Portal Map
TO-1	Swale			-72.837266	41.403191	ezFile Portal Map

Part V: Stormwater Discharge Information Continued

Table 2

2. Provide the following information about the receiving water(s)/wetland(s) that receive stormwater runoff from your site, either directly or through the storm sewer system:									
Outfall #	Dates when this outfall will be active:	a) To what system or receiving water does your stormwater runoff discharge? either "storm sewer or wetlands" or "waterbody" (If you select storm sewer or wetlands, columns c.1&2 of this table are not required to be completed)	b) What is your watershed ID (freshwater) or 305b ID (estuary)? (Section 3.b, DEP-GP-INST-015 explains how to find this information)	c.1) Is your receiving water identified as an impaired water in the "Impaired Waters Table for Construction Stormwater Discharges" ?	If you answered yes to question c.1, then answer the question below		For the drainage area associated with each outfall: Effective Impervious Area Before Construction (sq ft)	For the drainage area associated with each outfall: Effective Impervious Area After Construction (sq ft)	
					c.2) Has any Total Maximum Daily Load (TMDL) been approved for your receiving waterbody?				
EO-1	Start: 3 Apr 2017 End:	Storm Sewer or Wetlands		<input type="checkbox"/> Y <input type="checkbox"/> N <input checked="" type="checkbox"/> NA	<input type="checkbox"/> Y <input type="checkbox"/> N <input checked="" type="checkbox"/> NA		27104	27104	
EO-2	Start: 3 Apr 2017 End:	Storm Sewer or Wetlands		<input type="checkbox"/> Y <input type="checkbox"/> N <input checked="" type="checkbox"/> NA	<input type="checkbox"/> Y <input type="checkbox"/> N <input checked="" type="checkbox"/> NA		33127	33127	
TO-1	Start: 3 Apr 2017 End: 27 Oct 2017	Storm Sewer or Wetlands		<input type="checkbox"/> Y <input type="checkbox"/> N <input checked="" type="checkbox"/> NA	<input type="checkbox"/> Y <input type="checkbox"/> N <input checked="" type="checkbox"/> NA		88744	88744	
	Start: End:	Select One		<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> NA	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> NA				
	Start: End:	Select One		<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> NA	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> NA				
Provide the total effective impervious area for the entire site(sq ft):								148975	148975

Part V: Stormwater Discharge Information (continued)

Impaired waters: If you answered "yes" to Table 2, question 2.c.1, **verify** that the project's Pollution Control Plan (Plan) addresses the control measures below in Question 1 or 2, as appropriate.

1. **If the impaired water does not have a TMDL**, confirm compliance by selecting 1.a. or 2.b. below:

a. No more than 3 acres is disturbed at any time; ☐ Yes

OR

b. Stormwater runoff from a 2 yr, 24 rain event is **retained**. ☐ Yes

2. **If the impaired water has a TMDL**, confirm compliance by selecting 2.a. and 2.b. below and either question 2.c.1. or 2.c.2. below:

a. The Plan documents there is sufficient remaining Waste Load Allocations (WLA) in the TMDL for the proposed discharge, ☐ Yes

AND

b. Control measures shall be implemented to assure the WLA will not be exceeded, ☐ Yes

AND

c. 1. Stormwater discharges will be monitored for the indicator pollutant identified in the TMDL, ☐ Yes

OR

2. The Plan documents specific requirements for stormwater discharges specified in the TMDL. ☐ Yes

Part VI: Pollution Control Plan Availability (check one of the following four categories)

- ☒ I am registering a Locally Exempt project and submitting the required electronic Plan (in AdobeTM PDF or similarly publically available format) pursuant to Section 3(c)(2)(E) of this permit.
- ☒ Plan is attached to this registration form
- ☐ Plan is available at the following Internet Address (URL):

- ☐ I am registering a Locally Approvable project and have chosen not to submit the Plan with this registration pursuant to Section 3(c)(1) of this permit.
- ☐ I am registering a Locally Approvable project and have chosen to make my Plan electronically available pursuant to Section 4(c)(2)(N) of this permit.
- ☐ Plan is attached to this registration form
- ☐ Plan is available at the following Internet Address (URL):

- ☐ I am registering a Locally exempt project and do not have the capability to submit the Plan electronically. Therefore, I am submitting a paper copy with this registration as Attachment E.

Part VII: Registrant Certification

The registrant *and* the individual(s) responsible for actually preparing the registration must sign this part. A registration will be considered incomplete unless all required signatures are provided.

For New Registrants:

"I hereby certify that I am making this certification in connection with a registration under such general permit, submitted to the commissioner by E OF CONNECTICUT DEPARTMENT OF TRANSPORTA for an activity located at 171 Bassett Rd, North Haven Town of, CT 06473 and that all terms and conditions of the general permit are being met for all discharges which have been initiated and such activity is eligible for authorization under such permit. I further certify that a system is in place to ensure that all terms and conditions of this general permit will continue to be met for all discharges authorized by this general permit at the site. I certify that the registration filed pursuant to this general permit is on complete and accurate forms as prescribed by the commissioner without alteration of their text. I certify that I have personally examined and am familiar with the information that provides the basis for this certification, including but not limited to all information described in Section 3(b)(8)(A) of such general permit, and I certify, based on reasonable investigation, including my inquiry of those individuals responsible for obtaining such information, that the information upon which this certification is based is true, accurate and complete to the best of my knowledge and belief. I certify that I have made an affirmative determination in accordance with Section 3(b) (8) (B) of this general permit. I understand that the registration filed in connection with such general permit is submitted in accordance with and shall comply with the requirements of Section 22a-430b of Connecticut General Statutes, as amended by Public Act 12-172. I also understand that knowingly making any false statement made in the submitted information and in this certification may be punishable as a criminal offense, including the possibility of fine and imprisonment, under Section 53a-157b of the Connecticut General Statutes and any other applicable law."

For Re-registrants:

"I hereby certify that I am making this certification in connection with a registration under the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities, submitted to the commissioner by _____ for an activity located at _____

and that all terms and conditions of the general permit are being met for all discharges which have been initiated and such activity is eligible for authorization under such permit. I further certify that all designs and plans for such activity meet the current terms and conditions of the general permit in accordance with Section 5(b)(5)(C) of such general permit and that a system is in place to ensure that all terms and conditions of this general permit will continue to be met for all discharges authorized by this general permit at the site. I verify that the registration filed pursuant to this general permit is on complete and accurate forms as prescribed by the commissioner without alteration of their text. I certify that I have personally examined and am familiar with the information that provides the basis for this certification, including but not limited to all information described in Section 3(b)(8)(A) of such general permit, and I certify, based on reasonable investigation, including my inquiry of those individuals responsible for obtaining such information, that the information upon which this verification is based is true, accurate and complete to the best of my knowledge and belief. I also understand that knowingly making any false statement made in the submitted information and in this certification may be punishable as a criminal offense, including the possibility of fine and imprisonment, under Section 53a-157b of the Connecticut General Statutes and an other applicable law."

_____	_____
Signature of Registrant	
Domenic LaRosa	District III Engineer
Name of Registrant (print or type)	Title (if applicable)
_____	_____
Signature of Preparer and Date (if different than above)	
CHARLES EATON	
Name of Preparer (print or type)	Title (if applicable)

Part VIII: Professional Engineer (or Landscape Architect, where appropriate) Design Certification (for publically approvable and exempt projects)

The following certification must be signed by a Professional Engineer, or Landscape Architect where appropriate.

<p>"I hereby certify that I am a _____ licensed in the State of Connecticut. I am making this certification in connection with a registration under such general permit, submitted to the commissioner by <u>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</u> for an activity located at <u>171 Bassett Rd, North Haven Town of, CT 06473</u> . I certify that I have thoroughly and completely reviewed the Stormwater Pollution Control Plan for the project or activity covered by this certification. I further certify, based on such review and on the standard of care for such projects, that the Stormwater Pollution Control Plan has been prepared in accordance with the Connecticut Guidelines for Soil Erosion and Sediment Control, as amended, the Stormwater Quality Manual, as amended, and the conditions of the general permit, and that the controls required for such Plan are appropriate for the site. I further certify, based on reasonable investigation, including my inquiry of those individuals responsible for obtaining such information, that the information upon which this certification is based is true, accurate and complete to the best of my knowledge and belief. I also understand that knowingly making any false statement in this certification may subject me to sanction by the Department and/or be punishable as a criminal offense, including the possibility of fine and imprisonment, under Section 53a-157b of the Connecticut General Statutes and any other applicable law."</p>	
<p>_____</p>	
<p>Signature of Design Professional and Date</p>	
<p><u>CHARLES EATON</u></p>	<p><u>22337</u></p>
<p>Name of Professional (print or type)</p>	<p>License Number</p>
<p>Affix P.E./L.A Stamp Here</p>	

Part IX: Reviewing Qualified Professional Certification

The following certification must be signed by a) a Conservation District reviewer OR, b) a qualified soil erosion and sediment control and/ or professional engineer

<input type="checkbox"/> Review Certification by Conservation District:	
1.) District: _____	
Date of Affirmative Determination: _____	
“ I am making this certification in connection with a registration under General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities, submitted to the commissioner by _____ for an activity located at _____.	
I have personally examined and am familiar with the information that provides the basis for this certification, and I affirm, based on the review described in Section 3(b)(11)(C) of this general permit and on the standard of care for such projects, that the Stormwater Pollution Control Plan is adequate to assure that the activity authorized under this general permit will comply with the terms and conditions of such general permit and that all stormwater management systems: (i) have been designed to control pollution to the maximum extent achievable using measures that are technologically available and economically practicable and that conform to those in the Guidelines and the Stormwater Quality Manual; (ii) will function properly as designed; (iii) are adequate to ensure compliance with the terms and conditions of this general permit; and (iv) will protect the waters of the state from pollution.”	
_____ Signature of District Professional and Date	
_____ Name of District Professional	_____ License Number (if applicable)
Or	
<input type="checkbox"/> Review Certification by Qualified Professional:	
Company Name: _____	
Name: _____	
License #: _____	
Level of independency of professional:	
Required for all projects disturbing over 1 acre:	
1. I verify I am not an employee of the registrant.	<input type="checkbox"/> Yes
2. I verify I have no ownership interest of any kind in the project for which the registration is being submitted.	<input type="checkbox"/> Yes
Required for projects with 15 or more acres of site disturbance (in addition to questions 1&2):	
3. I verify I did not engage in any activities associated with the preparation, planning, designing or engineering of the soil erosion and sediment control plan or stormwater management systems plan for this registrant.	<input type="checkbox"/> Yes
4. I verify I am not under the same employ as any person associated with the preparation, planning, designing or engineering of the soil erosion and sediment control plan or stormwater management systems plan for this registrant.	<input type="checkbox"/> Yes

Part IX: Reviewing Qualified Professional Certification (continued)

"I hereby certify that I am a qualified professional engineer or qualified soil erosion and sediment control professional, or both, as defined in the General Permit for Discharge of Stormwater and Dewatering Wastewaters from Construction Activities and as further specified in Sections 3(b)(11)(A) and (B) of such general permit. I am making this certification in connection with a registration under such general permit, submitted to the commissioner by _____ for an activity located at _____.

I have personally examined and am familiar with the information that provides the basis for this certification, including but not limited to all information described in Section 3(b)(11)(C) of such general permit, and I certify, based on reasonable investigation, including my inquiry of those individuals responsible for obtaining such information, that the information upon which this certification is based is true, accurate and complete to the best of my knowledge and belief. I certify, based on my review of all information described in Section 3(b)(11)(C) of such general permit and on the standard of care for such projects, that I have made an affirmative determination in accordance with Sections 3(b)(11)(D)(i) and (ii) of this general permit. I understand that this certification is part of a registration submitted in accordance with Section 22a-430b of Connecticut General Statutes, as amended by Public Act 12-172, and is subject to the requirements and responsibilities for a qualified professional in such statute. I also understand that knowingly making any false statement in this certification may be punishable as a criminal offense, including the possibility of fine and imprisonment, under Section 53a-157b of the Connecticut General Statutes and any other applicable law."

Signature of Reviewing Qualified Professional

Name of Reviewing Qualified Professional

License No.

Affix P.E./ L.A. Stamp Here

Note: Please submit the fee along with a completed, printed and signed Registration Form and all additional supporting documents to:

**CENTRAL PERMIT PROCESSING UNIT
DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION
79 ELM STREET
HARTFORD, CT 06106-5127**

STORMWATER POLLUTION CONTROL PLAN

Replacement of Bridge 03120 Bassett Road over I-91 North Haven, CT

State Project No.: 100-178

Connecticut Department of Transportation

August 8, 2016

This Stormwater Pollution Control Plan (SWPCP) is prepared to comply with the requirements for the General Permit for Stormwater Discharges (GPSD) from Construction Activities. Also to be considered part of the SWPCP are the proposed construction plans, special provisions, and the Connecticut Department of Transportation's "Standard Specifications for Roads, Bridges and Incidental Construction" (Form 816), including supplements thereto, and the 2002 *Connecticut Guidelines for Soil Erosion and Sediment Control* and 2004 *Stormwater Quality Manual*.

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1. Site Description

Site Description

This project consists of the construction of Replacement Bridge 03120 on Bassett Road over I-91 in the urban area of North Haven.

The purpose of this project is to replace bridge 03120.

Site work includes bridge replacement.

Estimated Disturbed Area

The total area for this project site is 7.61 acres. Of this area, 3.84 acres will be disturbed by construction activities.

Estimated Runoff Coefficient

The runoff coefficient assumed for pavement (3.42 acres) is 0.9. For the pervious areas (4.19 acres), a coefficient of 0.3 was assumed.

$$\begin{array}{l} \text{Pre/Post-Construction} \\ \frac{(4.19 \text{ ac.} \times 0.3) + (3.42 \text{ ac.} \times 0.9)}{4.19 \text{ ac.} + 3.42 \text{ ac.}} = 0.57 \end{array}$$

The estimated runoff coefficients, with the corresponding contributing areas, are shown on Figures A-2.

Receiving Waters

The receiving waterbody are the wetlands in the median of I-91, which drain through swales, wetlands, and a series of pipes before finally draining to the Quinnipiac River. The flow path is approximately 1.5 miles from the site to the Quinnipiac River.

Extent of Wetlands On-Site

1,438 square feet of wetlands are on the site. No wetlands will be disturbed as part of the project. There are no regulated floodplain areas on this project.

2. Construction Sequencing

The Contractor will be given approximately April 1, 2017 to October 31, 2017 for the construction of all phases of the project.

The suggested sequence of construction is as follows:

1. Conduct a preconstruction meeting.
2. Install erosion controls at the effected inlets and at limits of disturbed slopes.
3. Perform clearing and grubbing activities.
4. Establish temporary detour and close Bassett Road.
5. Install the anti-tracking pads and concrete washout areas.
6. Prepare staging area at the median.
7. Demolish the existing bridge. Contractor is required to submit the detailed work outlining the demolition.
8. Construct the GRS-IBS common abutment at median.
9. Construct the GRS-IBS North and South abutment.
10. Install Span 1 PBU's.
11. Install Span 2 PBU's.
12. Construct backwall and install moment slabs in common abutment.
13. Install concrete sidewalks and curbing.
14. Construct roadway and finish bridge deck as indicated.
15. Grade grass slopes and immediately stabilize. Establish turf, per plan, on all remaining disturbed areas.
16. Remove erosion controls once all disturbed areas have been stabilized as determined by the Engineer.
17. Clean all post-construction stormwater structures of construction sediment, and remove any remaining silt fence prior to filing of the "Notice of Termination Form".
18. Perform project cleanup.

If the construction sequencing activities create an area of disturbance between two (2) acres and five (5) acres per discharge point, the Contractor must submit to the Engineer a revised SWPCP for review and approval. The SWPCP must include locations of the temporary sedimentation trap per discharge point with a capacity to contain 134 cubic yards per acre of material in accordance with the *2002 Guidelines*. The Contractor shall provide an inspection and maintenance plan for the temporary sedimentation trap as part of the amended SWPCP.

3. Control Measures

Erosion and Sedimentation (E&S) Controls

CTDOT will have construction inspection personnel assigned to the project in order to oversee the Contractor's operations to ensure compliance with the provisions of the Standard Specifications. Further CTDOT oversight is provided by the District 3 Environmental Coordinator and the Office of Environmental Planning.

The following timelines will be followed for the proposed construction activities:

- If construction activities are complete or have been temporarily halted for more than seven (7) days, stabilization activities will be implemented within three (3) days. *(See chapter 5 of the 2002 E & S Guidelines)*
- Areas that remain disturbed but inactive for at least 30 days shall receive temporary seeding or soil protection within seven (7) days.
- Disturbed areas that do not establish a vegetative cover within 30 days of seeding shall have erosion control blankets installed. Prior to the erosion control blanket installation, the soil would be prepared with the application of lime, fertilizer, and seed.
- Areas that will be disturbed past the planting season will be covered with a long-term, non-vegetative stabilization method that will provide protection through the winter.
- Stabilization practices will be implemented as quickly as possible in accordance with the Guidelines.
- The Contractor shall stabilize disturbed areas with temporary or permanent measures as quickly as possible after the land is disturbed. Requirements for soil stabilization are detailed in Form 816 Section 1.10.03, Best Management Practices.

Temporary Stabilization Practices

The following methods of temporary stabilization shall be used:

- Erosion Control Matting: On slopes steeper than 3:1, erosion control matting shall be used to stabilize the topsoil.
- Silt Fence: Silt fence shall be placed at the base of embankments.
- Anti-Tracking Pads: Construction entrances (gravel anti-tracking pads) shall be

constructed at truck access points to off-road route.

- Dust Control: Routine sweeping and application of dust suppression agents, including water and calcium chloride, over exposed sub base shall be completed for dust control.
- Catch Basin Inlet Protection: Catch basin inlet protection shall be used to reduce the amount of sediment entering the storm drainage system during construction.

Stabilization practices shall be implemented no more than three days after completion, as final grades are reached, or if work has been suspended for more than seven days.

Temporary seeding shall be spread over any disturbed areas which will remain inactive for at least 30 days. Areas to remain disturbed through winter shall be protected with non-vegetative stabilization measures. The Contractor must provide an E&S Control plan for each winter season during construction operations.

The Contractor may use other controls in the project, as necessary, if they conform to the *2002 Connecticut Guidelines for Erosion and Sediment Control* and are approved by the Engineer. The Contractor will be required to provide the necessary details for any erosion controls not specifically called for on the project plans.

During construction, all areas disturbed by the construction activity that have not been stabilized, all E&S control measures, all structural control measures, soil stockpile areas, washout areas and locations where vehicles enter or exit the site shall be inspected for evidence of, or the potential for, pollutants entering the drainage system and impacts to receiving waters at least once every seven calendar days and within 24 hours of the end of a storm that generates a discharge.

For storms that end on a weekend, holiday or other time in which working hours will not commence within 24 hours, an inspection is required within 24 hours only for storms that equal or exceed 0.5 inches. For lesser storms, inspection shall occur immediately upon the start of subsequent normal working hours.

Permanent Stabilization Practices

During construction, the following methods of permanent stabilization shall be installed:

- Permanent Seeding: Once soils have been brought to final grade, permanent seeding shall be used to stabilize the soil with a vegetative cover.
- Topsoiling: In conjunction with permanent seeding, once final grades have been established, topsoil shall be applied to provide a suitable growth medium for vegetation.
- Crushed Stone: Once final grades have been established, crushed stone shall be applied to locations shown on the plan to provide a stable soil cover.

All new embankments disturbed by construction and unpaved areas that are graded or disturbed by construction will receive erosion control matting, topsoil and/or turf establishment. The Contractor may use other permanent stabilization practices approved by the Engineer and conforming to the *2002 Connecticut Guidelines for Soil Erosion and Sediment Control*.

Structural Measures

The existing 15" CMPs have riprap outlet protection as shown on the plans to decrease velocity and erosion.

The following structural measures shall be used to divert flows, limit runoff, and minimize the discharge of pollutants:

- Outlet Protection: Riprap outlet protection shall be used at the proposed outlets to decrease velocity and the potential for erosion.

Maintenance

All construction activities and related activities shall conform to the requirements of Section 1.10 "Environmental Compliance" of CTDOT's Standard Specifications, Form 816. In general, all construction activities shall proceed in such a manner so as not to pollute any wetlands, watercourses, waterbodies, and conduits carrying stormwater. The Contractor shall limit, in so far as possible, the surface area of earthen materials exposed by construction activity and immediately provide temporary and permanent pollution control to prevent soil erosion and contamination on the site. Water pollution control provisions and best management practices per Section 1.10.03 of the Standard Specifications shall be administered during construction. Control measures shall be inspected and maintained in accordance with the *2002 Guidelines* and as directed by the Engineer.

4. Dewatering Wastewaters

Dewatering Guidelines

If encountered, dewatering wastewaters will be infiltrated into the ground unless otherwise directed by the Engineer. When dewatering is necessary, pumps used shall not be allowed to discharge directly into a wetland or watercourse. Prior to any dewatering, the Contractor must submit to the Engineer a written proposal for specific methods and devices to be used and obtain the Engineer's written approval of such methods and devices, including, but not limited to, the

pumping of water into a temporary sedimentation basin, providing surge protection at the inlet or outlet of pumps, floating the intake of a pump, or any other method for minimizing and retaining the suspended solids. If the Engineer determines that a pumping operation is causing turbidity problems, the Contractor shall halt said operation until a means of controlling the turbidity is submitted by the Contractor in writing to the Engineer, approved in writing by the Engineer and implemented by the Contractor. No discharge of dewatering wastewater shall contain or cause a visible oil sheen, floating solids or foaming in the receiving water. If required, all activities are to be performed in compliance with CTDOT Form 816.

5. Post-Construction Stormwater Management

Post-Construction Guidelines

After the project is complete, the Department will perform the following maintenance and restorative measures:

- Litter/debris will be removed from the site regularly.
- Mowing and maintenance of the turf areas and vegetated areas will occur as needed.
- Riprap outlet protection will be inspected and repaired annually or as needed.
- The stormwater basin will be inspected and repaired annually or as needed. Sediment will be removed when it interferes with the detention capacity of the basin. Outlets will be checked for excessive scour and repaired as needed.

Post-Construction Performance Standards and Control Measures

Redevelopment

This project has 45% impervious cover; however, the impervious cover does not change from preconstruction to post construction.

$(3.42 \text{ acres impervious} / 7.61 \text{ acres total area}) \times 100\% = 45\%$

Runoff Reduction and LID Practices

This project consists of the construction of Replacement Bridge 03120 on Bassett Road over I-91 in North Haven. Stormwater runoff and the runoff coefficients will not change from existing to proposed conditions. The project area required for construction of the project results in greater than 1 acre of ground disturbance; however, these areas are a temporary disturbance and will be restored to original grading with loam and seed. The runoff coefficients will not increase. There are no changes to stormwater practices. There is outlet protection at the existing 15" CMP

outlets. The outlet protection will reduce velocity from the existing 15" CMPs. The overall project will not increase runoff.

The ability to add LID practices to this bridge replacement project are limited due to the steep 1.5:1 grades in the shoulder of Bassett Road. The median of I-91 will be used as a lay-down area for the contractor. This area will be restored to its original condition with loam and seed. The area incorporates vegetated swales with non-curbed sheet flow runoff from I-91. Acquiring right-of-way is not planned with this bridge replacement project, so there is no space for additional LID practices with this project.

Suspended Solids and Floatables Removal

No changes to stormwater practices are proposed for this project. The median of I-91 will be used as a lay-down area for the contractor. This area will be restored to its original condition with loam and seed. The area incorporates vegetated swales with non-curbed sheet flow runoff from I-91.

Velocity Dissipation

Outlet protection is present at the existing 15" CMP outlets from the Bassett Road 03120 Bridge. See Appendix B for Drainage calculations.

6. Other Controls

Waste Disposal

Construction site waste shall be properly managed and disposed of during the entire construction period. Additionally:

- A waste collection area will be designated. The selected area will minimize truck travel through the site and will not drain directly to the adjacent wetlands.
- Waste collection shall be scheduled regularly to prevent the containers from overfilling.
- Spills shall be cleaned-up immediately.
- Defective containers that may cause leaks or spills will be identified through regular inspection. Any found to be defective will be repaired or replaced immediately.
- Any stockpiling of materials should be confined to the designated area as defined by the Engineer.

Washout Areas

Washout of applicators, containers, vehicles and equipment for concrete shall be conducted in a

designated washout area. No surface discharge of washout wastewaters from the area will be allowed. All concrete washwater will be directed into a container or pit such that no overflows can occur. Washout shall be conducted in an entirely self-contained system and will be clearly designed and flagged or signed where necessary. The washout area shall be located outside of any buffers and at least 50 feet from any stream, wetland or other sensitive water or natural resources as determined or designated by Engineer or CTDOT Office of Environmental Planning.

The designated area shall be designed and maintained such that no overflows can occur during rainfall or after snowmelt. Containers or pits shall be inspected at least once a week to ensure structural integrity, adequate holding capacity and will be repaired prior to future use if leaks are present. The Contractor shall remove hardened concrete waste when it accumulates to a height of $\frac{1}{2}$ of the container or pit or as necessary to avoid overflow. All concrete waste shall be disposed of in a manner consistent with all applicable laws, regulations and guidelines.

Anti-Tracking Pads and Dust Control

Off-site vehicle tracking of sediments and the generation of dust shall be minimized. Temporary anti-tracking pads from the active work site to the existing pavement will be installed and maintained at the locations shown on the plans. The Contractor shall:

- Maintain the entrance in a condition which will prevent tracking and washing of sediment onto paved surfaces.
- Provide periodic top dressing with additional stone or additional length as conditions demand.
- Repair any measures used to trap sediment, as needed.
- Immediately remove all sediment spilled, dropped, washed or tracked onto paved surfaces.
- Ensure that roads adjacent to a construction site are left clean at the end of each day.

If the construction entrance is being properly maintained and the action of a vehicle traveling over the stone pad is not sufficient to remove the majority of the sediment, then the Contractor shall either:

- Increase the length of the construction entrance,
- Modify the construction access road surface, or
- Install washing racks and associated settling area or similar devices before the vehicle enters a paved surface.

For construction activities which cause airborne particulates, wet dust suppression shall be utilized. Construction site dust will be controlled by sprinkling the ground surface with water until it is moist on an as-needed basis. The volume of water sprayed shall be such that it suppresses dust yet also prevents the runoff of water.

Post-Construction

Upon completion of construction activities and stabilization of the site, all post-construction stormwater structures, including outlet protection for the existing 15" CMPs, shall be cleaned of construction sediment, and any remaining silt fence shall be removed prior to acceptance of the project by CTDOT. Sediment shall be properly disposed of in accordance with all applicable laws, regulations and guidelines.

Maintaining and Storing Vehicles and Equipment

The Contractor shall take measures to prevent any contamination to wetlands and watercourses while maintaining and storing construction equipment on the site. All chemical and petroleum containers stored on-site shall be provided with impermeable containment which will hold at least 110% of the volume of the largest container, or 10% of the total volume of all containers in the area, whichever is larger, without overflow from the containment area. All chemicals and their containers shall be stored under a roofed area except for those stored in containers of 100 gallon capacity or more, in which case double-walled tanks will suffice.

7. Inspections

Inspection Guidelines

All construction activities shall be inspected initially for Plan implementation and then weekly for Routine Inspections.

During construction, all areas disturbed by the construction activity that have not been stabilized, all E&S control measures, all structural control measures, soil stockpile areas, washout areas and locations where vehicles enter or exit the site shall be inspected for evidence of, or the potential for, pollutants entering the drainage system and impacts to receiving waters at least once every seven calendar days and within 24 hours of the end of a storm that generates a discharge.

For storms that end on a weekend, holiday or other time in which working hours will not commence within 24 hours, an inspection is required within 24 hours only for storms that equal or exceed 0.5 inches. For lesser storms, inspection shall occur immediately upon the start of subsequent normal working hours.

Where sites have been temporarily or finally stabilized, such inspection shall be conducted at least once every month for three months.

Qualified personnel provided by the DOT District 3 Office shall conduct Inspections.

The following items shall be inspected as described below:

<u>Item</u>	<u>Procedure</u>
Silt Fence/Hay Bales	Silt fence shall be inspected to ensure that the fence line is intact with no breaks or tears. Fence and hay bales shall be firmly anchored to the ground. Areas where the fence is excessively sagging or where support posts are broken or uprooted shall be noted. Depth of sediment behind the fence and hay bales shall be noted. Hay bales shall be inspected to ensure they have not clogged.
Catch Basin Protection	Protective measures shall be inspected to ensure that sediment is not entering the catch basins. Catch basin sumps shall be monitored for sediment deposition.
Vehicle Entrances / Exits	Locations where vehicles enter or exit the site shall be inspected for evidence of off-site tracking.
General	Construction areas and the perimeter of the site shall be inspected for any evidence of debris that may blow or wash off-site or that has blown or washed off-site. Construction areas shall be inspected for any spills or unsafe storage of materials that could pollute off-site waters.

8. Keeping Plans Current

Revisions to Stormwater Pollution Control Plans

CTDOT shall amend the Plan if the actions required by the Plan fail to prevent pollution or otherwise comply with provisions of the General Permit. The Plan shall also be amended whenever there is a change in Contractors or Subcontractors at the site. If the results of the inspections require modifications to the Stormwater Pollution Control Plan, the plans shall be revised as soon as practicable after the inspection. Such modifications shall provide for a timely implementation of any changes to non-engineered controls on the site within 24 hours and implementation of any changes to the plan within 3 (three) calendar days following the inspection. For engineered measures, corrective actions shall be implemented on-site within 7 (seven) days and incorporated into a revised Plan within 10 (ten) days of the date of inspection

In no event shall the requirements to keep the Plan current or update a Plan, relieve the permittee

and their contactor(s) of the responsibility to properly implement any actions required to protect the waters of the State and to comply with all conditions of the permit.

9. Monitoring Requirements

A written report summarizing the scope of the inspection, the name(s) and qualifications of inspection personnel, the date and time of the inspection, major observations relative to the implementation of the Pollution Control Plan, and actions taken shall be completed within 24 hours of the inspection. This report shall be retained as part of the Stormwater Pollution Control Plan for at least five years after the date of the inspection.

Turbidity monitoring shall be conducted at the 3 locations depicted on the Plan utilizing a procedure consistent with 40 CFR Part 136 (http://www.epa.gov/region9/qa/pdfs/40cfr136_03.pdf) and may be taken manually or by an in-situ turbidity probe or other automatic sampling device equipped to take individual turbidity readings. The first sample shall be taken within the first hour of stormwater discharge from the site and at least three grab samples shall be taken during a storm event and shall be representative of the flow and characteristics of the discharge. Sampling shall be conducted monthly when there is a discharge of stormwater from the site while construction activity is ongoing, until final stabilization of the drainage area associated with each outfall is achieved.

Samples shall be taken during normal working hours, which for this project, shall be defined as Monday through Friday, 8 am to 4 pm. If a storm continues past working hours, sampling shall resume the following morning or the morning of the next working day following a weekend or holiday, as long as the discharge continues. Sampling may be temporarily suspended when conditions exist that may reasonably pose a threat to the safety of the person taking the sample.

Within 30 days following the end of each month, the stormwater sampling results shall be submitted on the Stormwater Monitoring Report (SMR) and in accordance with NetDMR. If there is no stormwater discharge during a month, sampling is not required; however, SMRs indicating “no discharge” shall still be submitted as required.

10. Contractors

General

This section shall identify all Contractors and Subcontractors who will perform on-site actions which may reasonably be expected to cause or have the potential to cause pollution of the waters of the State.

Certification Statement

All Contractors and Subcontractors must sign the attached statement. All certification will be included in the Stormwater Pollution Control Plan.

State Project No. 100-178

Replacement of Bridge 03120 Bassett Road over I-91
North Haven, CT

“I certify under penalty of law that I have read and understand the terms and conditions of the General Permit for the Discharge of Stormwater associated with construction activity. I understand that as Contractor on the project, I am covered by this general permit and must comply with the terms and conditions of this permit, including, but not limited to, the requirements of the Stormwater Pollution Control Plan prepared for this project.”

GENERAL CONTRACTOR

Signed: _____

Date: _____

Title: _____

Firm: _____

Telephone: _____

Address: _____

SUBCONTRACTOR

Signed: _____

Date: _____

Title: _____

Firm: _____

Telephone: _____

Address: _____

List of Applicable Figures and Forms

Appendix A – Project Location / Project Figures

Aerial Photo	Figures A-1.1, A-1.2
Pre and Post-Constructions AI Conditions	Figures A-2.1, A-2.2
Disturbed/Erodible Areas	Figures A-3.1, A-3.2

Appendix B – Drainage Calculations

Drainage Calculations for outlets at Sta. 11+49 20 ft. LT. and at Sta. 18+99 25 ft. LT.

Appendix C – Plan Sheets

Sedimentation and Erosion Control	HWY-04, STR-16
Site Plan	HWY-04, STR-16
Drainage and Utility Plan	HWY-04, STR-16, STR-02
Grading Plan	HWY-04, STR-16, STR-02
Civil Details	HWY-02, HWY-14

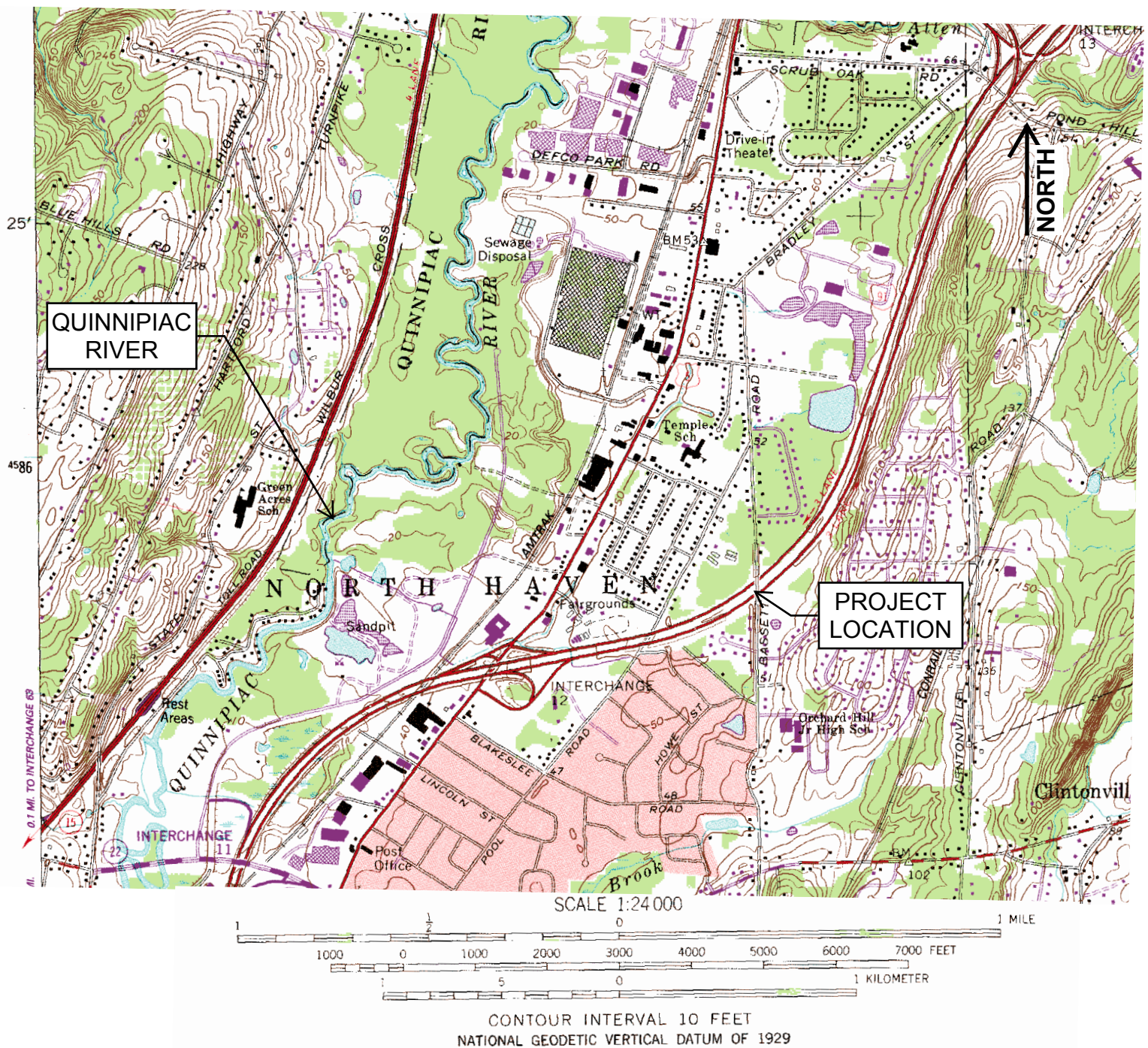
Appendix D – Stormwater Monitoring Report Form

Appendix E – Notice of Termination Form

Appendix A – Project Location/Project Figures



<p>STATE PROJECT NO.: 100-178</p> <p>CITY/TOWN: NORTH HAVEN</p>	<div data-bbox="505 1892 609 1976"> </div> <p>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</p> <div data-bbox="1040 1892 1122 1976"> </div> <p>55 BRIDGE NO. 03120 PROJECT LOCATION</p>	<div data-bbox="1170 1892 1243 1955"> </div> <p>CME</p> <p><small>CME ASSOCIATES, INC. 32 Crabtree Lane, Woodstock, CT 06091 303 East River Drive, East Hartford, CT 06108 50 Elm Street, Southbridge, MA 01550 888-291-3227 www.cmeengineering.com</small></p> <p>DATE: 08/2016</p> <p>SHEET NO.: FIGURE A-1.1</p>
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UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

WALLINGFORD, CONN.
41072-D7-TF-024

1967
PHOTOREVISED 1984
DMA 6466 IV NE-SERIES V816

STATE PROJECT NO.:
100-178

CITY/TOWN:
NORTH HAVEN



STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION



BRIDGE NO. 03120
PROJECT LOCATION



CME
CME ASSOCIATES, INC.
303 East River Drive, East Hartford, CT 06108
30 Elm Street, Southbridge, MA 01550
860-251-5257 | www.cmeengineering.com

DATE:
08/2016

SHEET NO.:
FIGURE A-1.2

**N/F
MARGARET
A. KEEFE**

N/F
PATRICK E.
SULLIVAN ET AL



SCALE: 1" = 40'

N/F
PATRICK E.
SULLIVAN ET AL

N/F
PATRICK E.
SULLIVAN ET AL

- N/F**
PATRICK E.
SULLIVAN ET AL

N/F
PATRICK E.
SULLIVAN ET AL

- N/F**
PATRICK E.
SULLIVAN ET AL

N/F
PATRICK E.
SULLIVAN ET AL

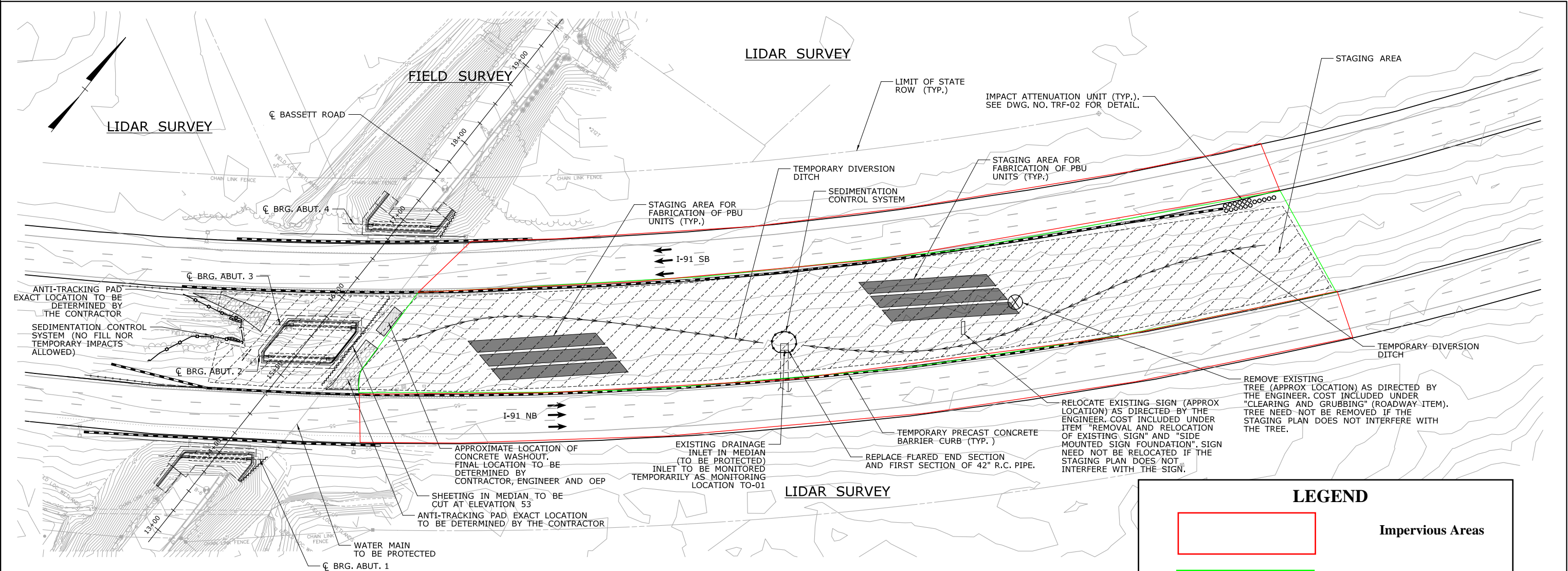
- N/F**
PATRICK E.
SULLIVAN ET AL

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PATRICK E.
SULLIVAN ET AL

N/F
PATRICK E.
SULLIVAN ET AL

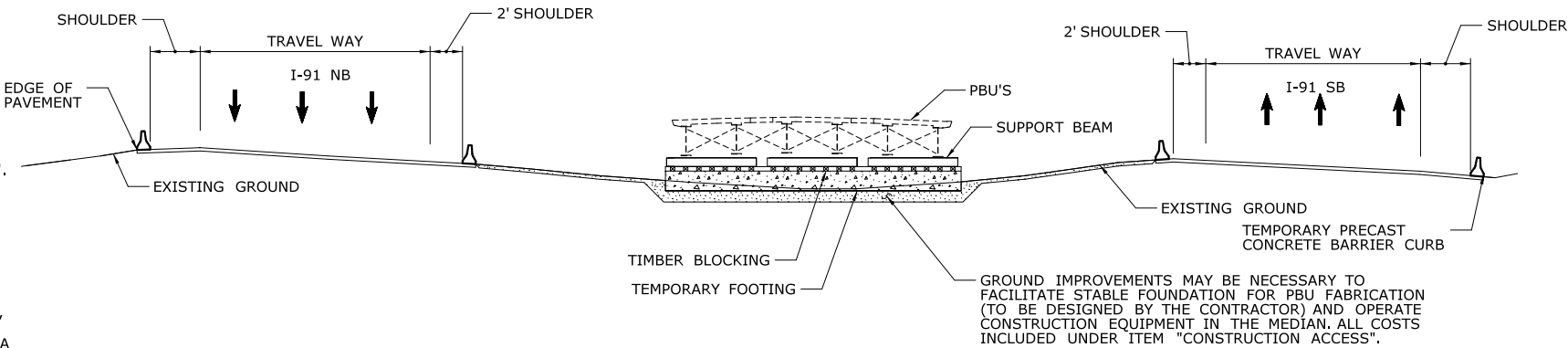


I-91 MEDIAN STAGING PLAN NOTES:

1. ALL SITE ACCESS PLANS SHOWN ON THE DRAWINGS ARE CONCEPTUAL. THE CONTRACTOR IS REQUIRED TO SUBMIT A DETAILED WORKING DRAWING SUBMISSION OUTLINING HIS SITE ACCESS PLAN IN ACCORDANCE WITH THE REQUIREMENTS OUTLINED IN THE SPECIAL PROVISION "CONSTRUCTION ACCESS".
2. THE CONCEPTUAL STAGING PLAN ASSUMES THAT THE PREFABRICATED BRIDGE UNITS WILL BE FABRICATED ON-SITE.
3. DURING ALL CONSTRUCTION WORK, THE CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO ENSURE THAT ALL WORK AT THE SITE ARE PERFORMED IN A SAFE MANNER.
4. ALL SITE WORK INCLUDING TRAFFIC INTO AND OUT OF THE SITE SHALL BE DONE IN ACCORDANCE WITH THE SPECIAL PROVISIONS "PROSECUTION AND PROGRESS", "LIMITATIONS OF OPERATIONS", "MAINTENANCE AND PROTECTION OF TRAFFIC" AND "CONSTRUCTION ACCESS".
5. THE CONTRACTOR SHALL CONSTRUCT AND MAINTAIN SAFE ZONES TO THE SITE FOR DELIVERIES INCLUDING INSTALLATION OF ANTI-TRACKING PADS. ALL PERTINENT INFORMATION SHALL BE SHOWN ON THE WORKING DRAWINGS SUBMISSION FOR "CONSTRUCTION ACCESS".
6. THE CONTRACTOR SHALL HAVE A PLAN TO MAINTAIN ADEQUATE DRAINAGE AT THE CONSTRUCTION SITE. DRAINAGE SHALL BE CHanneled AWAY FROM THE SITE TO AN UNUSED LOCATION OR CONNECTED TO EXISTING MEDIAN DRAINAGE. SHEET FLOW DRAINAGE FROM I-91 SHALL NOT BE IMPEDED AT ANY TIME.
7. FILLING IN OF WETLANDS OR OTHER WORK IN DESIGNATED WETLANDS WILL NOT BE ALLOWED.
8. ONCE ALL CONSTRUCTION WORK IS COMPLETE, THE CONTRACTOR SHALL RESTORE THE SITE TO ORIGINAL CONDITIONS. ALL COSTS TO DESIGN, ESTABLISH, MAINTAIN AND RESTORE THE I-91 MEDIAN STAGING SITE AREA INCLUDING GROUND IMPROVEMENTS TO SUPPORT PBU FABRICATION, TRAFFIC CONTROL INTO AND OUT OF THE SITE, TEMPORARY LANE CLOSURES FOR ACCESS TO THE SITE, DRAINAGE CONTROL MEASURES, RESTORING SITE TO ORIGINAL CONDITION ONCE CONSTRUCTION IS COMPLETE AND ANY OTHER INCIDENTAL COSTS SPECIFIC TO MAINTAINING A STAGING AREA IN THE I-91 MEDIAN IS INCLUDED UNDER THE ITEM "CONSTRUCTION ACCESS".
9. COST FOR STAGING AREAS ON BASSETT ROAD AND OTHER AREAS NOT WITHIN THE I-91 MEDIAN ARE INCLUDED UNDER THE MOBILIZATION COSTS.
10. TRAFFIC CLOSURES ON BASSETT ROAD AND I-91 SHALL BE IN ACCORDANCE WITH THE MAINTENANCE AND PROTECTION OF TRAFFIC PLANS AND IN ACCORDANCE WITH THE SPECIAL PROVISIONS.
11. INFORMATION FROM BOTH FIELD SURVEY AND LIDAR SURVEY ARE SHOWN ON THESE PLANS. LIDAR SURVEY IS TO BE USED FOR INFORMATION ONLY.
12. THE ENGINEER MAY REQUIRE ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES BASED ON FIELD CONDITIONS.

MEDIAN STAGING PLAN

SCALE: 1" = 50'



SCHEMATIC STAGING SECTION AT MEDIAN

NOT TO SCALE



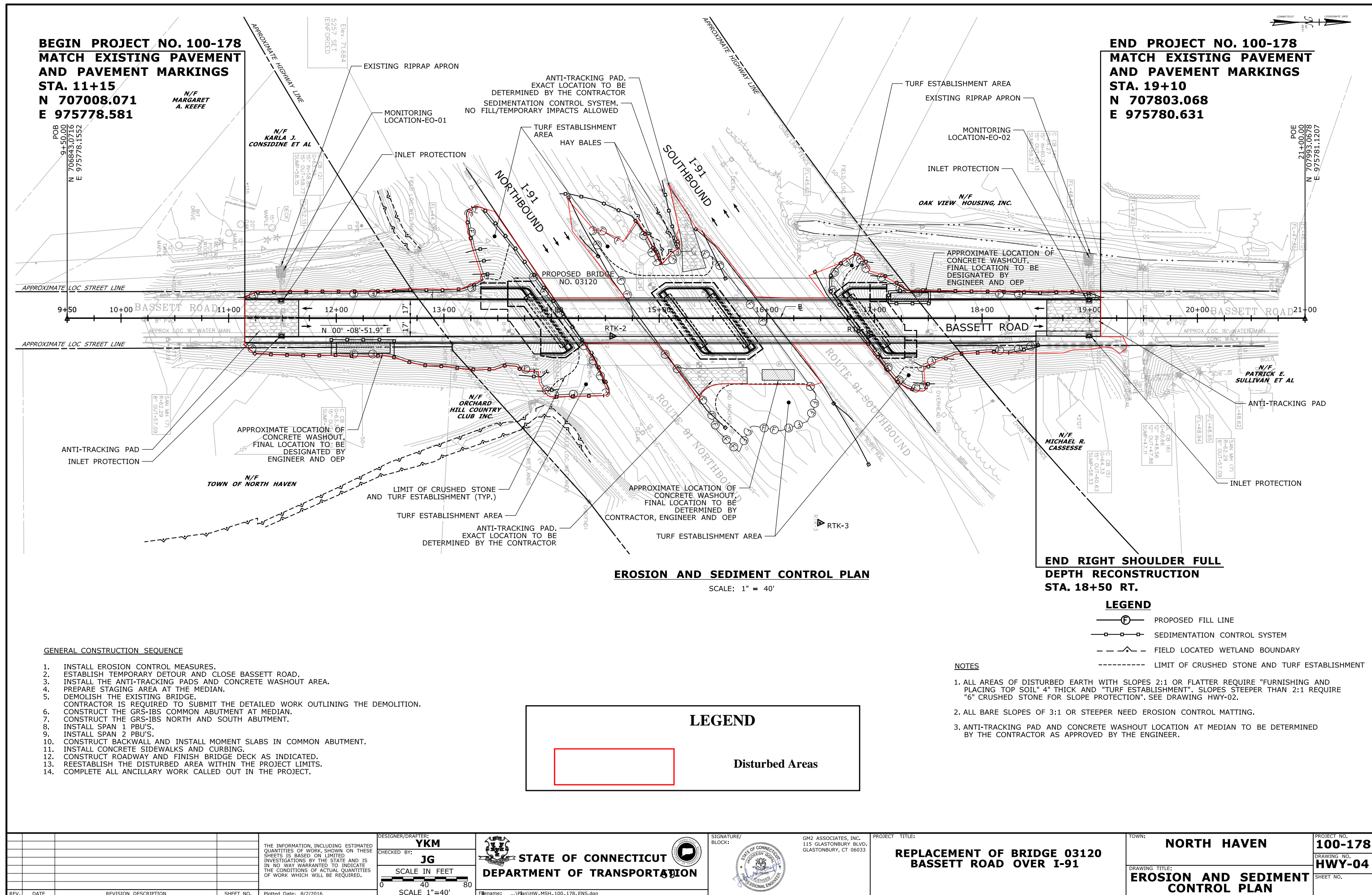
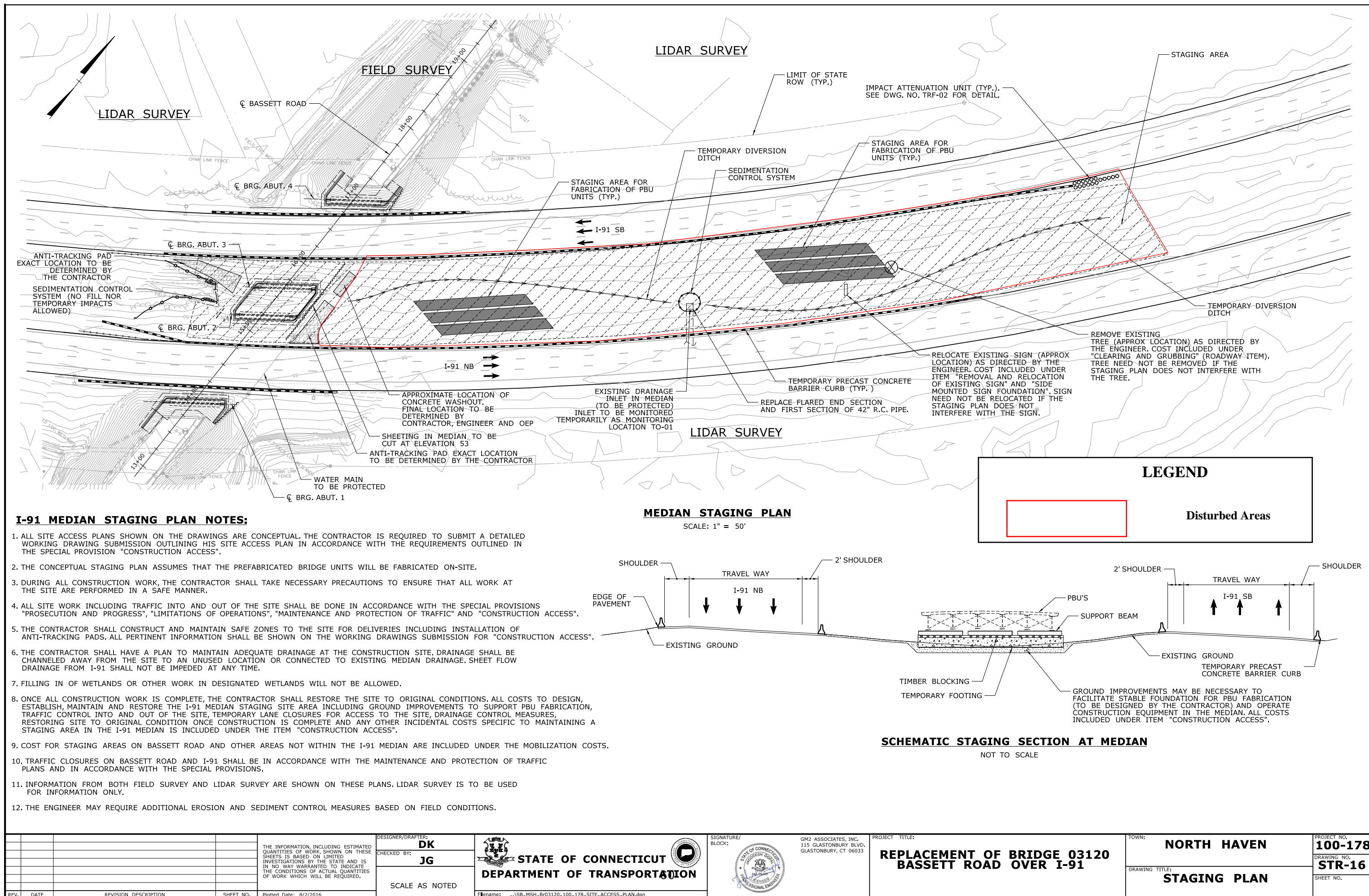
						THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.		DESIGNER/DRAFTER: DK		 STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION				SIGNATURE/ BLOCK: GM2 ASSOCIATES, INC. 115 GLASTONBURY BLVD. GLASTONBURY, CT 06033		PROJECT TITLE: REPLACEMENT OF BRIDGE 03120 BASSETT ROAD OVER I-91		TOWN: NORTH HAVEN		PROJECT NO. 100-178			
						CHECKED BY: JG																DRAWING NO. STR-16	
								SCALE AS NOTED															
										Filename: ...\\SB_MSH_Br03120_100_178_SITE_ACCESS_PLAN.dgn													
REV.	DATE	REVISION DESCRIPTION				SHEET NO.	Plotted Date: 8/2/2016																

FIGURE A-2.2





Appendix B – Drainage Calculations

Point precipitation frequency estimates (inches/hour)

NOAA Atlas 14 Volume 10 Version 2

Data type: Precipitation intensity

Time series type: Partial duration

Project area: Northeastern States

Location name: North Haven, Connecticut, US*

Station Name: -

Latitude: 41.4020°

Longitude: -72.8380°

Elevation: 79 ft*

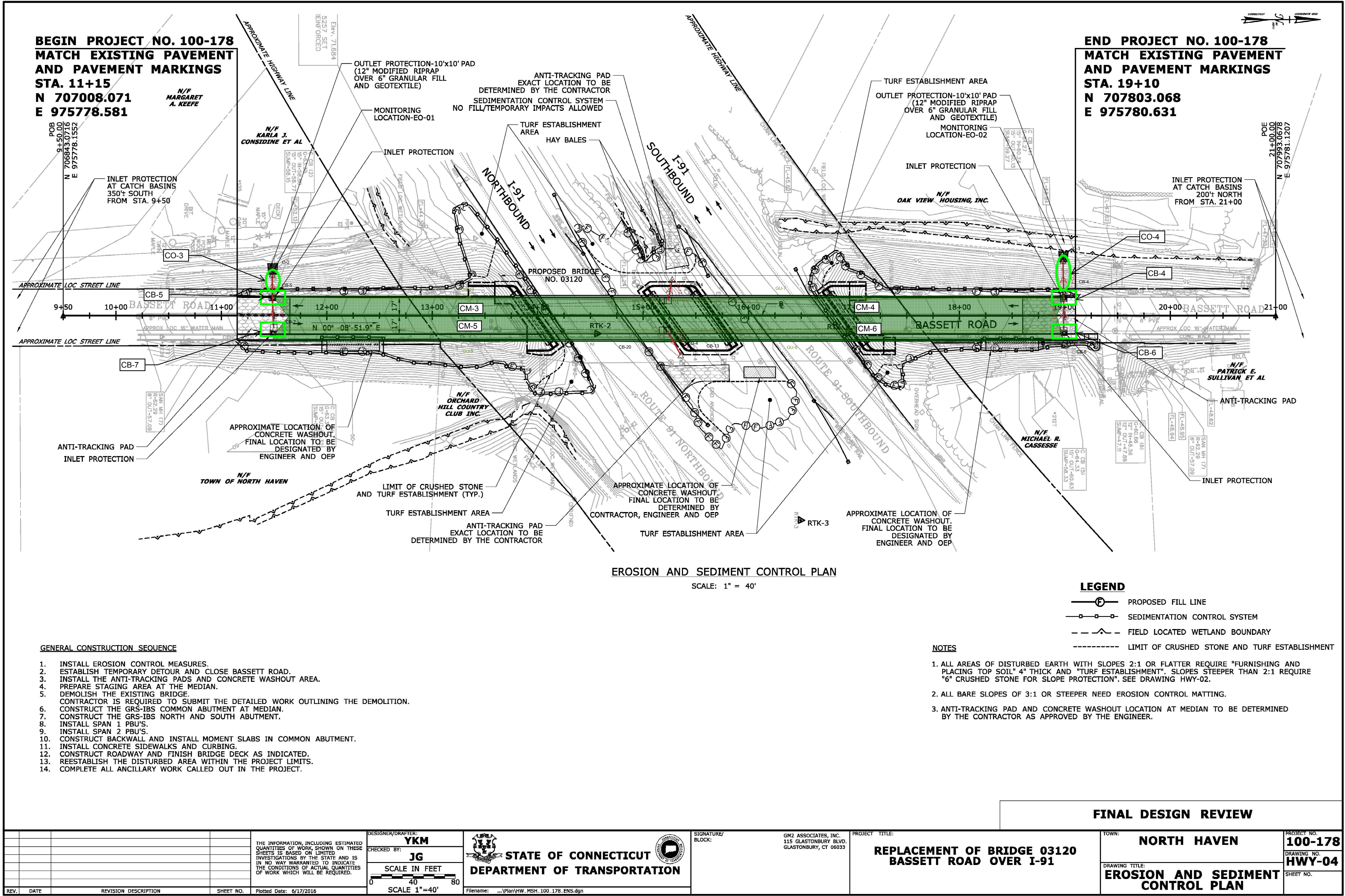
* source: Google Maps

Date/time (GMT): Tue Jul 19 17:08:45 2016

pyRunTime: 0.0927178859711

PRECIPITATION FREQUENCY ESTIMATES

by duration	1	2	5	10	25	50	100	200	500	1000 years
5-min:	4.12	4.98	6.4	7.58	9.2	10.45	11.71	13.3	15.41	16.99
10-min:	2.91	3.53	4.54	5.37	6.52	7.4	8.29	9.42	10.91	12.04
15-min:	2.28	2.77	3.56	4.21	5.11	5.81	6.5	7.39	8.56	9.44
30-min:	1.58	1.91	2.46	2.9	3.52	4	4.48	5.09	5.89	6.5
60-min:	1.01	1.22	1.57	1.85	2.25	2.55	2.85	3.24	3.75	4.14
2-hr:	0.66	0.8	1.01	1.19	1.44	1.63	1.82	2.08	2.42	2.67
3-hr:	0.51	0.62	0.78	0.92	1.11	1.26	1.4	1.6	1.86	2.06
6-hr:	0.33	0.39	0.5	0.59	0.71	0.8	0.9	1.03	1.2	1.33
12-hr:	0.2	0.24	0.31	0.37	0.44	0.5	0.56	0.65	0.76	0.84
24-hr:	0.12	0.14	0.19	0.22	0.27	0.31	0.35	0.41	0.48	0.54
2-day:	0.07	0.08	0.11	0.13	0.16	0.18	0.21	0.25	0.29	0.33
3-day:	0.05	0.06	0.08	0.1	0.12	0.13	0.15	0.18	0.22	0.24
4-day:	0.04	0.05	0.06	0.08	0.09	0.11	0.12	0.14	0.17	0.19
7-day:	0.03	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.11	0.12
10-day:	0.02	0.03	0.03	0.04	0.05	0.05	0.06	0.07	0.08	0.09
20-day:	0.02	0.02	0.02	0.02	0.03	0.03	0.04	0.04	0.05	0.05
30-day:	0.01	0.01	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.04
45-day:	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.03
60-day:	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02



Catchment FlexTable: CTDOT CATCHMENT								
ID	Label	Outflow Element	Area (User Defined) (acres)	Runoff Coefficient (Rational)	Catchment CA (acres)	Time of Concentration (min)	Flow (Total Out) (cfs)	Notes
33	CM-3	CB-19		0.950	0.122	5	1.13	
34	CM-4	CB-14		0.950	0.127	5	1.18	
55	CM-5	CB-20		0.950	0.161	5	1.49	
56	CM-6	CB-13		0.950	0.168	5	1.56	

DESIGN STORM: 25 YEAR STORM

Catch Basin FlexTable: CTDOT CATCHBASIN														
ID	Label	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Headloss Method	HEC-22 Benching Method	Inlet	Inlet Location	Manning's n (Inlet)	Longitudinal Slope (Inlet) (ft/ft)	Inlet Drainage Area (acres)	Flow (Captured) (cfs)	Capture Efficiency (Calculated) (%)
35	CB-4	64.27	60.13	60.70	60.70	Absolute	<None>	Curb Inlet	On Grade	0.012	0.047	(N/A)	0.93	78.3
36	CB-5	63.35	58.77	59.34	59.34	Absolute	<None>	Curb Inlet	On Grade	0.012	0.052	(N/A)	0.90	79.8
57	CB-6	64.33	60.63	61.12	61.12	Absolute	<None>	Curb Inlet	On Grade	0.012	0.047	(N/A)	1.15	73.8
59	CB-7	63.34	60.32	60.74	60.74	Absolute	<None>	Curb Inlet	On Grade	0.012	0.052	(N/A)	1.12	75.3
77	CB-13	78.37	0.00	0.05	0.05	Absolute	<None>	<None>	On Grade	0.013	0.001	0.177	0.00	0.1
78	CB-14	78.37	0.00	0.04	0.04	Absolute	<None>	<None>	On Grade	0.013	0.001	0.134	0.00	0.1
96	CB-19	78.37	0.00	(N/A)	(N/A)	Absolute	<None>	<None>	On Grade	0.013	0.010	0.128	0.00	0.1
97	CB-20	78.37	0.00	(N/A)	(N/A)	Absolute	<None>	<None>	On Grade	0.013	0.010	0.169	0.00	0.1

DESIGN STORM: 25 YEAR STORM

Conduit FlexTable: CTDOT CONDUIT

Label	Start Node	Invert (Start) (ft)	Stop Node	Invert (Stop) (ft)	Diameter (in)	Size	Manning's n	Length (Unified) (ft)	Slope (Calculated) (ft/ft)	Flow (cfs)	Flow / Capacity (Design) (%)	Capacity (Full Flow) (cfs)	Velocity (ft/s)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)	Depth (Out) (ft)	Depth (Normal) / Rise (%)
CO-3	CB-5	58.77	O-2	52.13	15.0	<None>	0.028	20.3	0.326	2.02	11.8	17.13	9.36	59.34	52.42	59.55	53.78	0.29	23.2
CO-4	CB-4	60.13	O-3	48.84	15.0	<None>	0.028	33.0	0.342	2.08	11.8	17.53	9.58	60.70	49.13	60.93	50.56	0.29	23.3
CO-5	CB-6	60.63	CB-4	60.24	15.0	<None>	0.028	28.3	0.014	1.15	32.7	3.52	2.57	61.12	60.70	61.22	60.82	0.46	39.3
CO-6	CB-7	60.32	CB-5	58.80	15.0	<None>	0.028	26.8	0.057	1.12	15.7	7.15	4.24	60.74	59.34	60.89	59.41	0.54	26.7
CO-12	CB-14	0.00	O-5	0.00	12.0	<None>	0.013	18.9	0.000	0.00	Infinity	0.00	0.00	0.04	0.01	0.04	0.02	0.01	(N/A)
CO-13	CB-13	0.00	O-4	0.00	12.0	<None>	0.013	24.4	0.000	0.00	Infinity	0.00	0.00	0.05	0.02	0.05	0.02	0.02	(N/A)

DESIGN STORM: 25 YEAR STORM

Outlet Protection

Project Name: North Haven Bridge # 03120

Project # 100_178

Date: August 8, 2016

Following Guidelines From ConnDOT Drainage Manual (May 2002)

From StormCAD

Outlet	25yr Q	25yr V	25yr TW
15" CMP South	2.02 cfs	9.36 fps	0.6 ft
15" CMP North	2.08 cfs	9.58 fps	0.6 ft

15" CMP South (STA 11+49)

Type 'C' Riprap Apron

Per Table 11.11

V = 8-10 fps

Therefore Use

Intermediate Riprap

$$La = ((3.0(Q-5))/Sp^{1.5})+10$$

$$La = ((3.0(1.8-5))/1.25^{1.5})+10$$

$$La = 3.1$$

Use 10' Minimum Length per Table 11-13.1

$$W3 = 3(Sp)$$

$$W3 = 3(1.25)$$

$$W3 = 4$$

OR

$$W3 = CB + (1 + TW)2Z$$

$$W3 = 2 + (1 + 0.5)2(3)$$

$$W2 = 11.00$$

Use 11'

OR

$$W3 = 2Z(0.7Rp) + CB$$

$$W3 = 2(3)(0.7(1.25)) + 2$$

$$7.25$$

15" CMP North (STA 19+00)

Type 'C' Riprap Apron

Per Table 11.11

V = 8-10 fps

Therefore Use

Intermediate Riprap

$$La = ((3.0(Q-5))/Sp^{1.5})+10$$

$$La = ((3(1.8-5))/1.25^{1.5})+10$$

$$La = 3.1$$

Use 10' Minimum Length per Table 11-13.1

$$W3 = 3(Sp)$$

$$W3 = 3(1.25)$$

$$W3 = 4$$

OR

$$W3 = CB + (1 + TW)2Z$$

$$W3 = 2 + (1 + 0.5)2(3)$$

$$W2 = 11.00$$

Use 11'

OR

$$W3 = 2Z(0.7Rp) + CB$$

$$W3 = 2(3)(0.7(1.25)) + 2$$

$$7.25$$

Prepared By: LKMM

Checked By: C. EATON

11.13.3 Design Criteria

The design of riprap outlet protection applies to the immediate area or reach downstream of the pipe outlet and does not apply to continuous rock linings of channels or streams. For pipe outlets at the top of exit slopes or on slopes greater than 10%, the designer should assure that suitable safeguards are provided beyond the limits of the localized outlet protection to counter the highly erosive velocities caused by the reconcentration of flow beyond the initial riprap apron. Outlet protection shall be designed according to the following criteria:

- Riprap outlet protection shall be used at all outlets not flowing over exposed rock or into deep watercourses and ponds.
- In situations not covered by the above noted criteria and where the exit velocity is ≤ 4.27 mps (14 fps), a riprap apron shall also be used. For Type A and B riprap aprons, the type of riprap specified is dependent on the outlet velocity (see Section 11.13.6) and can be determined from Table 11.5. For Type C aprons, the type of riprap specified is determined by the procedures in HEC-15 and HEC-11 depending on the design discharge. See Chapter 7, Channels.
- The type of riprap apron and dimensions are determined by the guidelines outlined in Sections 11.13.2 and 11.13.5, respectively.
- When the outlet velocity is > 4.27 mps (14 fps), the designer should first investigate methods to reduce the outlet velocity. This may be accomplished by any one or combination of the following: increasing the pipe roughness, increasing the pipe size and/or decreasing the culvert slope. When this is not possible or economical, a number of outlet protection or energy dissipation design options are available. These are presented in detail in HEC-14. In most instances, however, a preformed scour hole design should be used, as it generally can provide the necessary degree of protection at an economical cost. The design of a preformed scour hole is presented in Section 11.13.6.

The design criteria of this section should be applicable to most outlet situations. However, recognizing that design and site conditions can vary significantly depending on the project or location on a particular project, it is the responsibility of the designer to ensure that the criteria is suitable to the site or to provide an alternate design which will adequately protect the outlet area from scour and erosion. These situations should be documented in the drainage design report.

Table 11.11 Allowable Outlet Velocities for Type A and B Riprap Aprons

Outlet Velocity - mps (fps)	Riprap Specification
0-2.44 (0-8)	Modified
2.44-3.05 (8-10)	Intermediate
3.05-4.27 (10-14)	Standard

11.13.4 Tailwater Depth

The depth of tailwater immediately at the pipe outlet is required for the design of outlet protection and must be determined for the design flow rate. Manning's equation may be used to determine tailwater depth. See Sections 8.3.5 and 8.3.6 for additional information on how to determine the tailwater depth.

OUTLET PROTECTION - OUTLET VELOCITY ≤ 14 feet/sec

DISCHARGE (cfs)	OUTLET PIPE DIAMETER OR SPAN (in)									
	12	15	18	24	30	36	42	48	54	60
0-5	10	10		USE						
5.5	12	11								
6		12	12			MINIMUM				
7		14	13	12						
8			15	13						
8.5			16	14				LENGTH		
9				14						
10				15	14					
11				16	15					
12				17	15	14			OUTLINED	
13				18	16	15				
14					17	15	14			
16		USE			18	16	15	14		
18						18	16	15		
20						19	17	16		
22						20	18	16		
24							19	17	16	
26							20	18	17	16
28			PREFORMED				21	19	17	16
30							21	19	18	17
32							22	20	18	17
35								21	19	18
40								23	21	19
45								25	23	21
48					SCOUR			26	24	22
50									24	22
55									26	23
60									27	25
63									28	26
65										26
75							HOLE			29
80										30

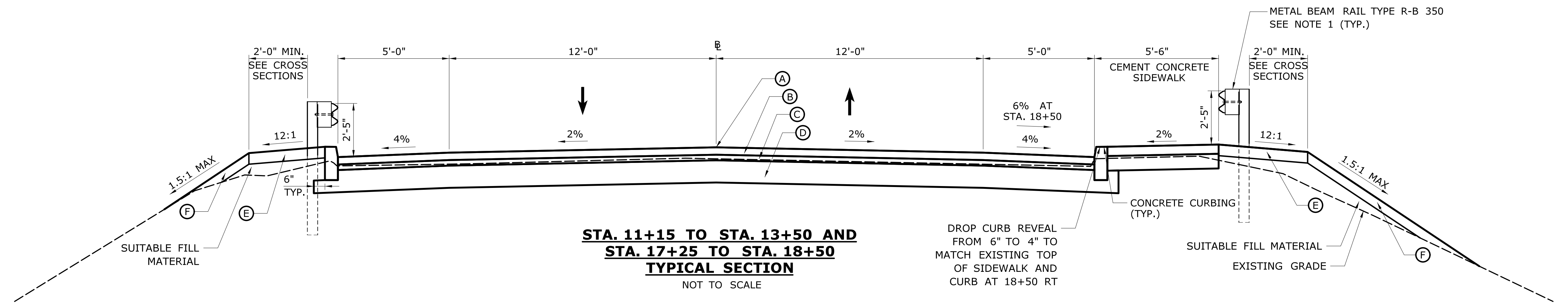
Table 11-13.1 - Length - L_a (feet)**Type B or C Riprap Apron**

Notes: 1. Bold face outlined boxes indicate minimum L_a to be used for a given pipe diameter or span.
 2. Rounding and interpolating are acceptable.

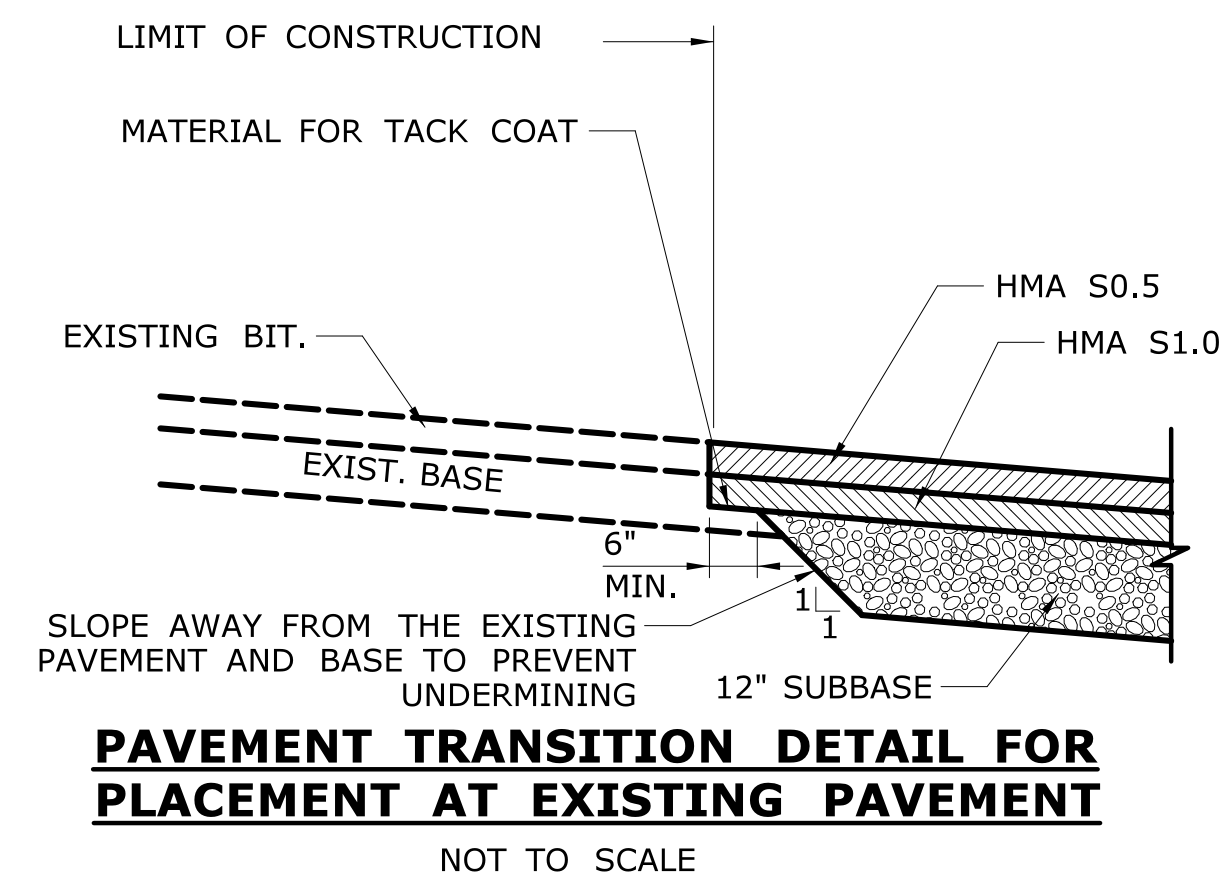
Appendix C – Plan Sheets



DRAWING NO.
GEN-01
SHEET NO.



FOR ROADWAY SECTION BETWEEN STA. 13+50 TO STA. 17+25 SEE STRUCTURE PLANS.
FOR ROADWAY SECTION BETWEEN STA. 18+50 RT TO STA. 19+10 RT, SEE NOTE 6 AND CROSS-SECTIONS.





LEGEND:

- (A) POINT OF APPLICATION OF GRADE
- (B) 4" HMA S0.5 (TWO EQUAL LIFTS)
- (C) 4" HMA S1.0
- (D) 12" SUBBASE
- (E) 6" PROCESSED AGGREGATE
- (F) 6" CRUSHED STONE FOR SLOPE PROTECTION

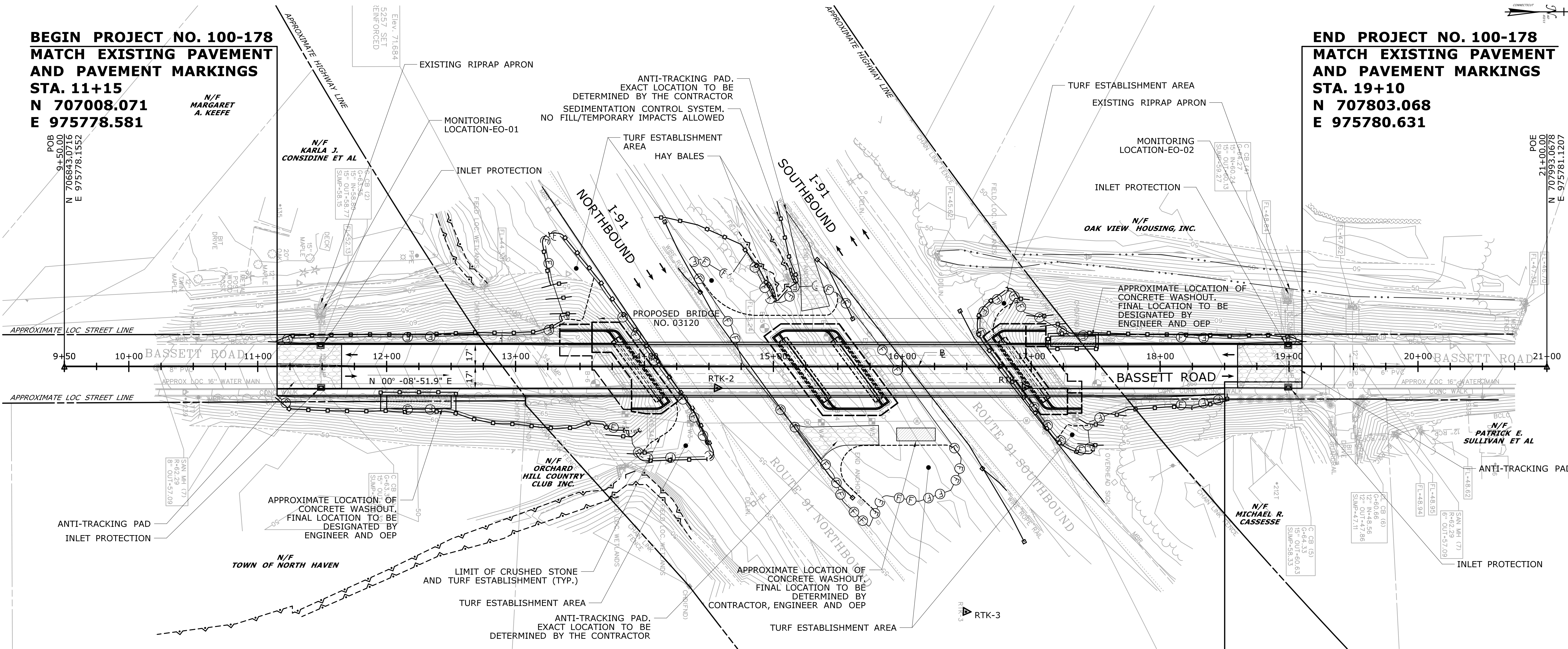
NOTES:

1. SEE ROADWAY PLAN FOR GUIDERAIL LIMITS.
2. UPON COMPLETION OF ALL OTHER CONSTRUCTION ITEMS, THE FINAL COURSE OF HMA SHALL BE PLACED IN ONE OPERATION OVER THE LIMITS SHOWN ON THE ROADWAY PLAN TO CREATE A CLEAN UNIFORM SURFACE.
3. SLOPES 2:1 OR FLATTER REQUIRE "FURNISHING AND PLACING TOP SOIL" 4" THICK AND "TURF ESTABLISHMENT".
4. SLOPES STEEPER THAN 2:1 REQUIRE "6" CRUSHED STONE FOR SLOPE PROTECTION".
5. SUITABLE MATERIAL EXCAVATED DURING CONSTRUCTION OF ROADWAY TO BE USED FOR FILL MATERIAL.
6. FROM STA. 18+50 RT TO STA. 19+10 RT, CONTINUE WITH FULL-DEPTH RECONSTRUCTION OF THE 12' NORTHBOUND TRAVEL LANE ONLY. FOR THE NORTHBOUND RIGHT SHOULDER, REMOVE THE EXISTING PAVEMENT STRUCTURE TO A DEPTH OF APPROXIMATELY 4" AND PLACE BACK 4" HMA S0.5 (PLACED IN TWO EQUAL LIFTS) ON THE EXISTING GRANULAR MATERIAL. DO NOT DISTURB THE EXISTING CURBING, SIDEWALK, GUIDERAIL, SLOPE AND PLANTINGS.

				DESIGNER/DRAFTER: YKM		 STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION		SIGNATURE/ BLOCK: GM2 ASSOCIATES, INC. 115 GLASTONBURY BLVD. GLASTONBURY, CT 06033	PROJECT TITLE: REPLACEMENT OF BRIDGE 03120 BASSETT ROAD OVER I-91	TOWN: NORTH HAVEN	PROJECT NO. 100-178	
				CHECKED BY: LEP								SCALE AS NOTED
REV.	DATE	REVISION DESCRIPTION	SHEET NO.	Plotted Date: 8/2/2016		Filename: ...\\HW..MSH..100..178..TYP.dgn		DRAWING TITLE: TYPICAL ROADWAY SECTION		DRAWING NO. HWY-02		
											SHEET NO.	

BEGIN PROJECT NO. 100-178
MATCH EXISTING PAVEMENT
AND PAVEMENT MARKINGS
STA. 11+15
N 707008.071
E 975778.581

END PROJECT NO. 100-178
MATCH EXISTING PAVEMENT
AND PAVEMENT MARKINGS
STA. 19+10
N 707803.068
E 975780.631



EROSION AND SEDIMENT CONTROL PLAN

SCALE: 1" = 40'

END RIGHT SHOULDER FULL
DEPTH RECONSTRUCTION
STA. 18+50 RT.

LEGEND



- PROPOSED FILL LINE
- SEDIMENTATION CONTROL SYSTEM
- FIELD LOCATED WETLAND BOUNDARY
- LIMIT OF CRUSHED STONE AND TURF ESTABLISHMENT

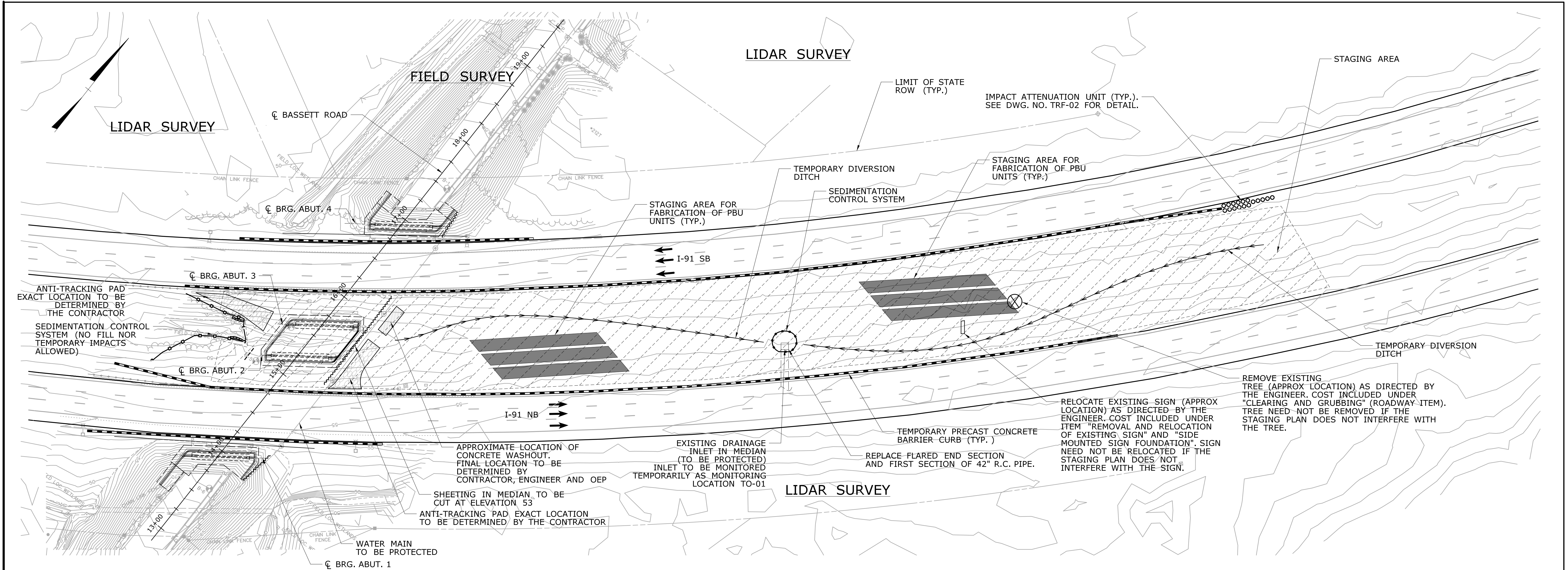
GENERAL CONSTRUCTION SEQUENCE

- INSTALL EROSION CONTROL MEASURES.
- ESTABLISH TEMPORARY DETOUR AND CLOSE BASSETT ROAD.
- INSTALL THE ANTI-TRACKING PADS AND CONCRETE WASHOUT AREA.
- PREPARE STAGING AREA AT THE MEDIAN.
- DEMOLISH THE EXISTING BRIDGE.
- CONTRACTOR IS REQUIRED TO SUBMIT THE DETAILED WORK OUTLINING THE DEMOLITION.
- CONSTRUCT THE GRS-IBS COMMON ABUTMENT AT MEDIAN.
- CONSTRUCT THE GRS-IBS NORTH AND SOUTH ABUTMENT.
- INSTALL SPAN 1 PBU'S.
- INSTALL SPAN 2 PBU'S.
- CONSTRUCT BACKWALL AND INSTALL MOMENT SLABS IN COMMON ABUTMENT.
- INSTALL CONCRETE SIDEWALKS AND CURBING.
- CONSTRUCT ROADWAY AND FINISH BRIDGE DECK AS INDICATED.
- REESTABLISH THE DISTURBED AREA WITHIN THE PROJECT LIMITS.
- COMPLETE ALL ANCILLARY WORK CALLED OUT IN THE PROJECT.

NOTES

- ALL AREAS OF DISTURBED EARTH WITH SLOPES 2:1 OR FLATTER REQUIRE "FURNISHING AND PLACING TOP SOIL" 4" THICK AND "TURF ESTABLISHMENT", SLOPES STEEPER THAN 2:1 REQUIRE "6" CRUSHED STONE FOR SLOPE PROTECTION". SEE DRAWING HWY-02.
- ALL BARE SLOPES OF 3:1 OR STEEPER NEED EROSION CONTROL MATTING.
- ANTI-TRACKING PAD AND CONCRETE WASHOUT LOCATION AT MEDIAN TO BE DETERMINED BY THE CONTRACTOR AS APPROVED BY THE ENGINEER.

				DESIGNER/DRAFTER: YKM CHECKED BY: JG SCALE IN FEET <div><div></div><div>04080</div></div> SCALE 1"=40'		<div>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</div> <div>Filename: ...\\Plan\\HW_MSH_100-178_ENS.dgn</div>	<div>SIGNATURE/ BLOCK:  GM2 ASSOCIATES, INC. 115 GLASTONBURY BLVD. GLASTONBURY, CT 06033</div>	PROJECT TITLE: REPLACEMENT OF BRIDGE 03120 BASSETT ROAD OVER I-91	TOWN: NORTH HAVEN	PROJECT NO. 100-178 DRAWING NO. HWY-04 SHEET NO.
REV.	DATE	REVISION DESCRIPTION	SHEET NO.	Plotted Date: 8/2/2016						
THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.										
DRAWING TITLE: EROSION AND SEDIMENT CONTROL PLAN										

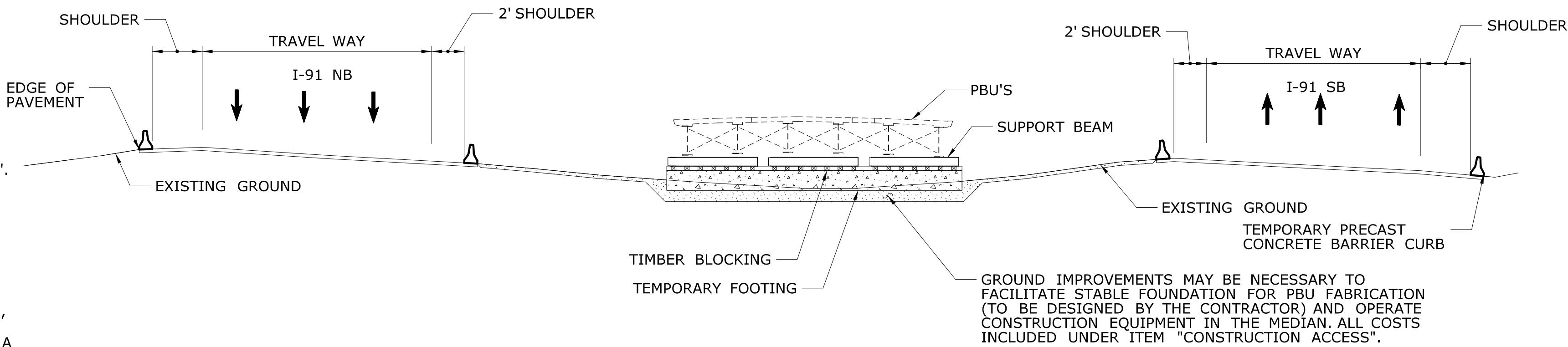


I-91 MEDIAN STAGING PLAN NOTES:

1. ALL SITE ACCESS PLANS SHOWN ON THE DRAWINGS ARE CONCEPTUAL. THE CONTRACTOR IS REQUIRED TO SUBMIT A DETAILED WORKING DRAWING SUBMISSION OUTLINING HIS SITE ACCESS PLAN IN ACCORDANCE WITH THE REQUIREMENTS OUTLINED IN THE SPECIAL PROVISION "CONSTRUCTION ACCESS".
2. THE CONCEPTUAL STAGING PLAN ASSUMES THAT THE PREFABRICATED BRIDGE UNITS WILL BE FABRICATED ON-SITE.
3. DURING ALL CONSTRUCTION WORK, THE CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO ENSURE THAT ALL WORK AT THE SITE ARE PERFORMED IN A SAFE MANNER.
4. ALL SITE WORK INCLUDING TRAFFIC INTO AND OUT OF THE SITE SHALL BE DONE IN ACCORDANCE WITH THE SPECIAL PROVISIONS "PROSECUTION AND PROGRESS", "LIMITATIONS OF OPERATIONS", "MAINTENANCE AND PROTECTION OF TRAFFIC" AND "CONSTRUCTION ACCESS".
5. THE CONTRACTOR SHALL CONSTRUCT AND MAINTAIN SAFE ZONES TO THE SITE FOR DELIVERIES INCLUDING INSTALLATION OF ANTI-TRACKING PADS. ALL PERTINENT INFORMATION SHALL BE SHOWN ON THE WORKING DRAWINGS SUBMISSION FOR "CONSTRUCTION ACCESS".
6. THE CONTRACTOR SHALL HAVE A PLAN TO MAINTAIN ADEQUATE DRAINAGE AT THE CONSTRUCTION SITE. DRAINAGE SHALL BE CHanneled AWAY FROM THE SITE TO AN UNUSED LOCATION OR CONNECTED TO EXISTING MEDIAN DRAINAGE. SHEET FLOW DRAINAGE FROM I-91 SHALL NOT BE IMPEDED AT ANY TIME.
7. FILLING IN OF WETLANDS OR OTHER WORK IN DESIGNATED WETLANDS WILL NOT BE ALLOWED.
8. ONCE ALL CONSTRUCTION WORK IS COMPLETE, THE CONTRACTOR SHALL RESTORE THE SITE TO ORIGINAL CONDITIONS. ALL COSTS TO DESIGN, ESTABLISH, MAINTAIN AND RESTORE THE I-91 MEDIAN STAGING SITE AREA INCLUDING GROUND IMPROVEMENTS TO SUPPORT PBU FABRICATION, TRAFFIC CONTROL INTO AND OUT OF THE SITE, TEMPORARY LANE CLOSURES FOR ACCESS TO THE SITE, DRAINAGE CONTROL MEASURES, RESTORING SITE TO ORIGINAL CONDITION ONCE CONSTRUCTION IS COMPLETE AND ANY OTHER INCIDENTAL COSTS SPECIFIC TO MAINTAINING A STAGING AREA IN THE I-91 MEDIAN IS INCLUDED UNDER THE ITEM "CONSTRUCTION ACCESS".
9. COST FOR STAGING AREAS ON BASSETT ROAD AND OTHER AREAS NOT WITHIN THE I-91 MEDIAN ARE INCLUDED UNDER THE MOBILIZATION COSTS.
10. TRAFFIC CLOSURES ON BASSETT ROAD AND I-91 SHALL BE IN ACCORDANCE WITH THE MAINTENANCE AND PROTECTION OF TRAFFIC PLANS AND IN ACCORDANCE WITH THE SPECIAL PROVISIONS.
11. INFORMATION FROM BOTH FIELD SURVEY AND LIDAR SURVEY ARE SHOWN ON THESE PLANS. LIDAR SURVEY IS TO BE USED FOR INFORMATION ONLY.
12. THE ENGINEER MAY REQUIRE ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES BASED ON FIELD CONDITIONS.



MEDIAN STAGING PLAN

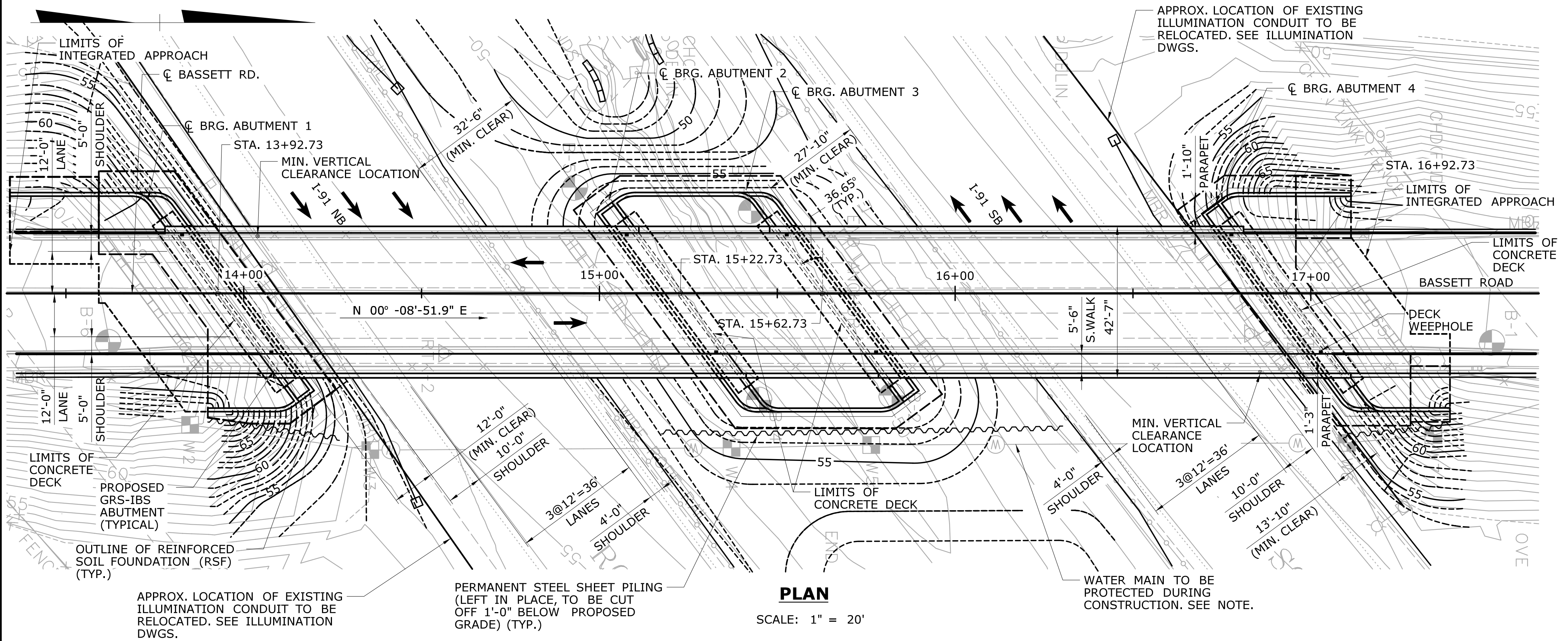
SCALE: 1" = 50'



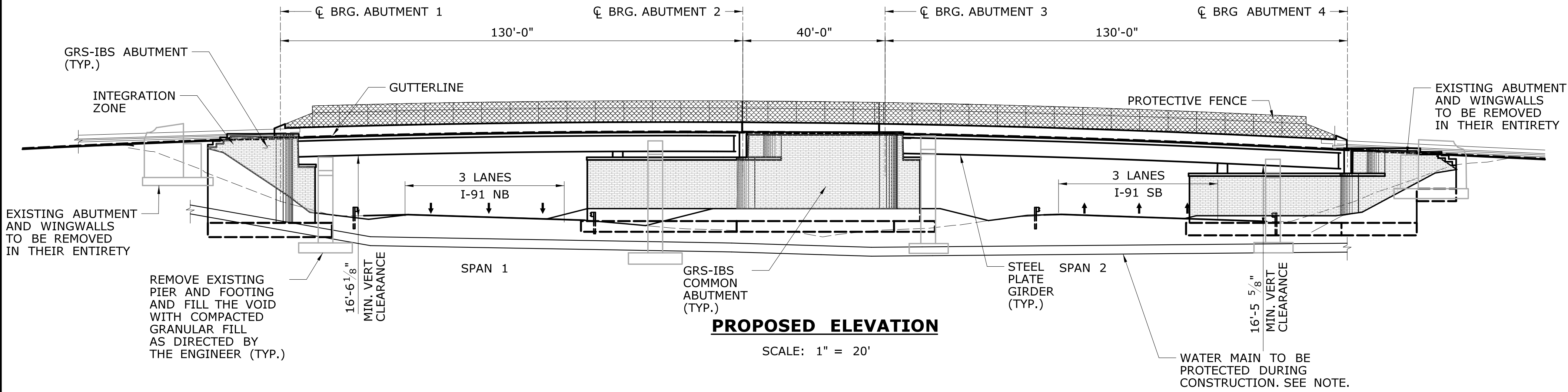
SCHEMATIC STAGING SECTION AT MEDIAN

NOT TO SCALE

				THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.		DESIGNER/DRAFTER: DK	 STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION		SIGNATURE/ BLOCK: GM2 ASSOCIATES, INC. 115 GLASTONBURY BLVD. GLASTONBURY, CT 06033	PROJECT TITLE: REPLACEMENT OF BRIDGE 03120 BASSETT ROAD OVER I-91	TOWN: NORTH HAVEN	PROJECT NO. 100-178					
						CHECKED BY: JG											
						SCALE AS NOTED											
REV.	DATE	REVISION DESCRIPTION	SHEET NO.	Plotted Date: 8/2/2016	Filename: ...\\SB_MSH_Br03120-100-178_SITE_ACCESS_PLAN.dgn								DRAWING NO. STR-16				
												DRAWING TITLE: STAGING PLAN	SHEET NO.				



PLAN
SCALE: 1" = 20'



PROPOSED ELEVATION
SCALE: 1" = 20'

NOTE: THE WATER MAIN IS CAPABLE OF SUPPORTING ONLY ROUTINE H20 LOADS. THE CONTRACTOR SHALL TAKE ADEQUATE PRECAUTIONS SO THAT THE AXLE LOADS THAT TRAVEL OVER THE WATER MAIN EITHER ON I-91 OR WITHIN THE MEDIAN DO NOT EXCEED THE LOADS (INDIVIDUAL OR GROUPS OF AXLES) IMPOSED BY A H20 VEHICLE.

NOTICE TO BRIDGE INSPECTORS	
THE DEPARTMENT'S BRIDGE SAFETY PROCEDURES REQUIRE THIS BRIDGE TO BE INSPECTED FOR, BUT NOT LIMITED TO, ALL APPROPRIATE COMPONENTS INDICATED IN THE GOVERNING MANUAL FOR BRIDGE INSPECTION. ATTENTION MUST BE GIVEN TO INSPECTING THE FOLLOWING SPECIAL COMPONENTS AND DETAILS, (THE LISTING FOR SPECIFIC ATTENTION SHALL NOT BE CONSTRUED TO REDUCE THE IMPORTANCE OF INSPECTION OF ANY OTHER COMPONENT OF THE STRUCTURE). THE FREQUENCY OF INSPECTION OF THIS STRUCTURE SHALL BE IN ACCORDANCE WITH THE GOVERNING MANUALS FOR BRIDGE INSPECTION. UNLESS OTHERWISE DIRECTED BY THE MANAGER OF SAFETY AND EVALUATION.	
COMPONENT OR DETAIL	STRUCTURE SHEET REFERENCE
FOLLOW NORMAL INSPECTION PROCEDURES	

CONCRETE DISTRIBUTION		
SUPERSTRUCTURE	C.Y.	648
SUBSTRUCTURE	C.Y.	181
FOOTINGS	C.Y.	N/A
TOTAL	C.Y.	829

STEEL PLATE GIRDER SHIPPING DATA			
MAX. SHIPPING LENGTH	MAX. SHIPPING HEIGHT	MAX. SHIPPING WIDTH	MAX. SHIPPING WEIGHT
131'-6"	5'-10"	1'-6"	33,000 LBS

INSPECTION OF FIELD WELDS		
METHOD	UNIT	QUANTITY
ULTRASONIC	IN	-
MAGNETIC PARTICLE	IN	-

GENERAL NOTES:

SPECIFICATIONS: CONNECTICUT DEPARTMENT OF TRANSPORTATION FORM 816 (2004), SUPPLEMENTAL SPECIFICATIONS DATED JANUARY 2016 AND SPECIAL PROVISIONS.

DESIGN SPECIFICATION: AASHTO LRFD DESIGN SPECIFICATIONS, 7TH EDITION (2014), WITH THE INTERIM SPECIFICATIONS UP TO AND INCLUDING (2015), AS SUPPLEMENTED BY THE CONNECTICUT DEPARTMENT OF TRANSPORTATION BRIDGE DESIGN MANUAL (2003), WITH THE LATEST REVISIONS.

FHWA GEOSYNTHETIC REINFORCED SOIL INTEGRATED BRIDGE SYSTEM (GRS-IBS) INTERIM IMPLEMENTATION GUIDE DATED JUNE 2012

ALLOWABLE DESIGN STRESSES: CLASS "F" CONCRETE BASED ON $f_c=4,000$ psi
HIGH EARLY STRENGTH CONCRETE BASED ON $f_c=4,000$ psi
CLASS "50" CONCRETE BASED ON $f_c=5,000$ psi
REINFORCEMENT (ASTM A615, GRADE 60), $F_y= 60,000$ psi

THE SPECIFIED CONCRETE STRENGTH USED IN DESIGN, f_c , OF THE CONCRETE COMPONENTS IS NOTED ABOVE. THE MINIMUM COMPRESSIVE STRENGTH OF THE CONCRETE IN THE CONSTRUCTED COMPONENTS SHALL CONFORM TO THE REQUIREMENTS OF "SECTION 6.01 CONCRETE FOR STRUCTURES."

STRUCTURAL STEEL: SEE STRUCTURAL STEEL NOTES ON DWG. STR-34 FOR DESIGNATIONS AND REQUIREMENTS.

BITUMINOUS CONCRETE OVERLAY: THIS SHALL CONSIST OF TWO LIFTS: THE FIRST SHALL BE "HMA 50.25" (1" THICK) AND THE SECOND LIFT SHALL BE "HMA 50.5" (2" THICK).

FOUNDATION PRESSURES: THE LIMIT STATES NOTED ON THE SUBSTRUCTURE PLAN SHEETS REFER TO LIMIT STATES AS GIVEN IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

BORING LOGS: FOR BORING LOGS, SEE DWG. STR-06 THROUGH STR-15.

DIMENSIONS: WHEN DECIMAL DIMENSIONS ARE GIVEN LESS THAN THREE DECIMAL PLACES, THE OMITTED DIGITS SHALL BE ASSUMED TO BE ZEROS.

EXISTING DRAWINGS: PLANS OF THE EXISTING STRUCTURE ARE INCLUDED FOR GENERAL REFERENCE ONLY AND MAY NOT DEPICT AS-BUILT CONDITIONS NOR ALL MODIFICATIONS MADE SINCE ORIGINAL CONSTRUCTION. THE CONTRACTOR SHALL TAKE ALL FIELD MEASUREMENTS NECESSARY TO ASSURE PROPER FIT OF THE FINISHED WORK AND SHALL ASSUME FULL RESPONSIBILITY FOR THEIR ACCURACY.

UTILITIES: THE CONTRACTOR SHALL PROTECT AND MAINTAIN ALL EXISTING UTILITIES WITHIN THE PROJECT LIMITS, UNLESS NOTED OTHERWISE. IF ANY UTILITY IS DAMAGED OR SERVICE IS INTERRUPTED DURING CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING FULL SERVICE IN A SAFE MANNER APPROVED BY THE UTILITY COMPANY AND ENGINEER.

LIVE LOAD: HL-93.

FUTURE PAVING ALLOWANCE: NONE.

CONCRETE NOTES:

STAY-IN-PLACE FORMS: THE USE OF STAY-IN-PLACE FORMS ON THIS STRUCTURE IS ALLOWED.

COMPOSITE CONSTRUCTION: NO TEMPORARY INTERMEDIATE SUPPORTS SHALL BE USED DURING THE PLACING AND SETTING OF THE CONCRETE DECK SLAB. TEMPORARY SUPPORTS MAY BE USED FOR STRUCTURAL STEEL ERECTION ONLY. CONSTRUCTION LOADS AND DEAD LOADS WILL BE PERMITTED WHEN DIRECTED BY THE ENGINEER BUT ONLY WHEN THE CONCRETE HAS REACHED A STRENGTH OF $f_c = 3500$ psi. LIVE LOADS (TRAFFIC) WILL BE PERMITTED ON THE STRUCTURE AFTER THE CONCRETE HAS REACHED A STRENGTH OF $f_c = 4000$ psi.

GLOBAL LATERAL STABILITY: THE CONTRACTOR NEEDS TO TAKE ADEQUATE PRECAUTIONS TO ENSURE THAT THE LATERAL STABILITY OF THE BEAMS CAN BE MAINTAINED DURING CONSTRUCTION OF THE DECK. THIS WILL INCLUDE TEMPORARY EXTERNAL OR INTERNAL BRACES FOR THE TOP FLANGE.

CLASS "50" CONCRETE: CLASS "50" CONCRETE SHALL BE USED FOR THE PRECAST CONCRETE LOAD DISTRIBUTION SLABS AND THE PRECAST PORTIONS OF THE MOMENT SLABS IN THE COMMON ABUTMENT.

CLASS "F" CONCRETE: CLASS "F" CONCRETE SHALL BE USED FOR THE PRECAST PORTIONS OF THE CONCRETE DECK, PARAPETS, SIDEWALKS AND C.I.P. PORTIONS OF THE MOMENT SLAB.

HIGH EARLY STRENGTH CONCRETE: HIGH EARLY STRENGTH CONCRETE SHALL BE USED FOR CAST IN PLACE CLOSURE POURS BETWEEN PREFABRICATED BRIDGE UNITS, CLOSURE POUR IN THE DISTRIBUTION SLAB, THE CAST-IN-PLACE BACKWALL AND TO FILL THE DECK OPENING FOR THE LIFTING LUG.

EXPOSED EDGES: EXPOSED EDGES OF CONCRETE SHALL BE BEVELED 1" X 1" UNLESS DIMENSIONED OTHERWISE.

CONCRETE COVER: ALL REINFORCEMENT SHALL HAVE 2" COVER UNLESS DIMENSIONED OTHERWISE.

REINFORCEMENT: ALL REINFORCEMENT SHALL BE ASTM A615, GRADE 60 UNLESS NOTED OTHERWISE.

EPOXY COATED REINFORCING BARS: ALL REINFORCEMENT IN THE PARAPETS, DECK SLABS, SIDEWALK, BACKWALLS, DISTRIBUTION SLABS, MOMENT SLABS AND IN THE TOP MAT OF THE CONCRETE APPROACH SLABS SHALL BE EPOXY COATED UNLESS OTHERWISE NOTED. THESE BARS SHALL BE INCLUDED IN THE PAY ITEM "DEFORMED STEEL BARS (EPOXY COATED)".

CLOSED CELL ELASTOMER: THE COST OF FURNISHING AND INSTALLING CLOSED CELL ELASTOMER SHALL BE INCLUDED IN THE PAY ITEM "GRS ABUTMENT AND WINGWALL".

CONSTRUCTION JOINTS: CONSTRUCTION JOINTS, OTHER THAN THOSE SHOWN ON THE PLANS, WILL NOT BE PERMITTED WITHOUT PRIOR APPROVAL OF THE ENGINEER.

PARAPETS AND SIDEWALKS: PARAPETS AND SIDEWALKS SHALL BE CAST IN PLACE.

REV.	DATE	REVISION DESCRIPTION	SHEET NO.	Plotted Date: 8/2/2016

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.

DESIGNER/DRAFTER:
SC/AB
CHECKED BY:
JG
SCALE AS NOTED

**STATE OF CONNECTICUT**
DEPARTMENT OF TRANSPORTATION

Filename: ...\\SB_MSH_Br03120_100_178_GPN.dgn

SIGNATURE/
BLOCK:



GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

PROJECT TITLE:

**REPLACEMENT OF BRIDGE 03120
BASSETT ROAD OVER I-91**

TOWN:

NORTH HAVEN

DRAWING TITLE:

GENERAL PLAN

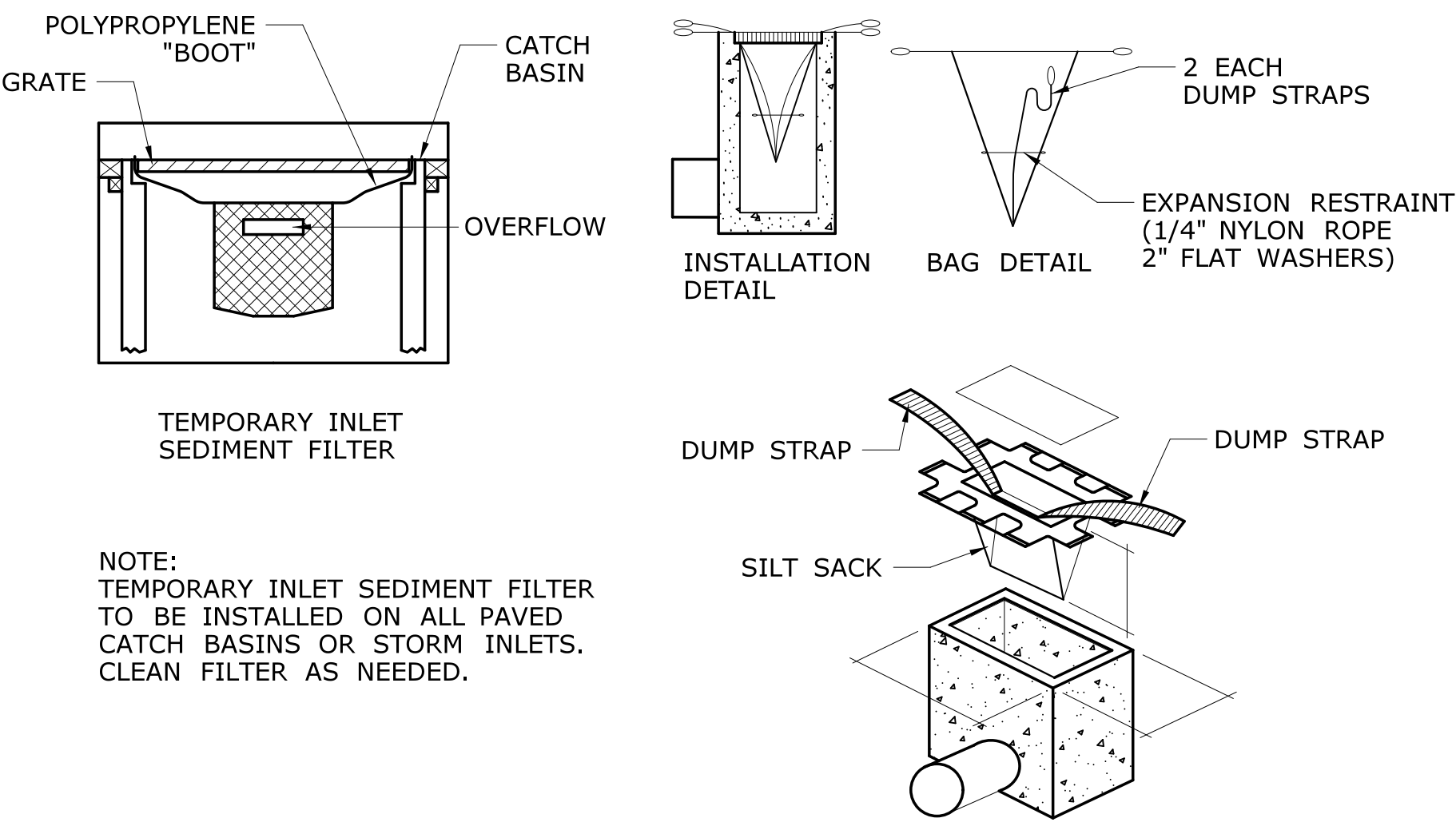
PROJECT NO.

100-178

DRAWING NO.

STR-02

SHEET NO.



NOTE:
TEMPORARY INLET SEDIMENT FILTER
TO BE INSTALLED ON ALL PAVED
CATCH BASINS OR STORM INLETS.
CLEAN FILTER AS NEEDED.

**INLET PROTECTION
SILT SACK DETAIL**
NOT TO SCALE

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DRAWING TITLE:
**MISCELLANEOUS
DETAILS - 02**

DRAWING NO.
HWY-14

SHEET NO.

Appendix D – Stormwater Monitoring Report Form



**Connecticut Department of
Energy & Environmental Protection**
Bureau of Materials Management & Compliance Assurance
Water Permitting & Enforcement Division

**General Permit for the Discharge of Stormwater and Dewatering Wastewaters from
Construction Activities, issued 8/21/13, effective 10/1/13**
Stormwater Monitoring Report

SITE INFORMATION

Permittee:	_____
Mailing Address:	_____
Business Phone:	_____ ext.: _____ Fax: _____
Contact Person:	_____ Title: _____
Site Name:	_____
Site Address:	_____
Receiving Water (name, basin):	_____
Stormwater Permit No.	<u>GSN</u> _____

SAMPLING INFORMATION (Submit a separate form for each outfall)

Outfall Designation:	_____	Date/Time Collected:	_____
Outfall Location(s) (lat/lon or map link):	_____		
Person Collecting Sample:	_____		
Storm Magnitude (inches):	_____	Storm Duration (hours):	_____
Size of Disturbed Area at any time:	_____		

MONITORING RESULTS

Sample #	Parameter	Method	Results (units)	Laboratory (if applicable)
1	Turbidity			
2	Turbidity			
3	Turbidity			
4	Turbidity			

(provide an attachment if more than 4 samples were taken for this outfall)

Avg =

STATEMENT OF ACKNOWLEDGMENT

I certify that the data reported on this document were prepared under my direction or supervision in accordance with the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities. The information submitted is, to the best of my knowledge and belief, true, accurate and complete.

Authorized Official: _____
Signature: _____ Date: _____

Please send completed form to:

DEPARTMENT OF ENERGY & ENVIRONMENTAL PROTECTION
BUREAU OF MATERIALS MANAGEMENT AND COMPLIANCE ASSURANCE
79 ELM STREET
HARTFORD, CT 06106-5127
ATTN: NEAL WILLIAMS

Appendix E – Notice of Termination Form



General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities

Notice of Termination Form

Please complete and submit this form in accordance with the general permit (DEP-PED-GP-015) in order to ensure the proper handling of your termination. Print or type unless otherwise noted.

Note: Ensure that for commercial and industrial facilities, registrations under the *General Permit for the Discharge of Stormwater Associated with Industrial Activity* (DEP-PED-GP-014) or the *General Permit for the Discharge of Stormwater from Commercial Activities* (DEP-PED-GP-004) have been filed where applicable. For questions about the applicability of these general permits, please call the Department at 860-424-3018.

Part I: Registrant Information

1. Permit number: **GSN**
2. Fill in the name of the registrant(s) as indicated on the registration certificate:
Registrant:
3. Site Address:
City/Town: State: Zip Code:
4. Date all storm drainage structures were cleaned of construction sediment:
Date of Completion of Construction:
Date of Last Inspection (must be at least three months after final stabilization pursuant to Section 6(b)(6)(D) of the general permit):
5. Check the post-construction activities at the site (check all that apply):
☐ Industrial ☐ Residential ☐ Commercial ☐ Capped Landfill
☐ Other (describe):

Part II: Certification

"I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify that, based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief. I understand that a false statement made in this document or its attachments may be punishable as a criminal offense, in accordance with Section 22a-6 of the Connecticut General Statutes, pursuant to Section 53a-157b of the Connecticut General Statutes, and in accordance with any other applicable statute."

Signature of Permittee

Date

Name of Permittee (print or type)

Title (if applicable)


Note: Please submit this Notice of Termination Form to:

STORMWATER PERMIT COORDINATOR
BUREAU OF WATER MANAGEMENT
DEPARTMENT OF ENVIRONMENTAL PROTECTION
79 ELM STREET
HARTFORD, CT 06106-5127

Natural Diversity Data Base Areas

NORTH HAVEN, CT

September 2015

 State and Federal Listed Species
& Significant Natural Communities

 Town Boundary

NOTE: This map shows general locations of State and Federal Listed Species and Significant Natural Communities. Information on listed species is collected and compiled by the Natural Diversity Data Base (NDDB) from a number of data sources. Exact locations of species have been buffered to produce the general locations. Exact locations of species and communities occur somewhere in the shaded areas, not necessarily in the center. A new mapping format is being employed that more accurately models important riparian and aquatic areas and eliminates the need for the upstream/downstream searches required in previous versions.

This map is intended for use as a preliminary screening tool for conducting a Natural Diversity Data Base Review Request. To use the map, locate the project boundaries and any additional affected areas. If the project is within a shaded area there may be a potential conflict with a listed species. For more information, complete a Request for Natural Diversity Data Base State Listed Species Review form (DEP-APP-007), and submit it to the NDDB along with the required maps and information. More detailed instructions are provided with the request form on our website.

www.ct.gov/deep/nddbrequest

Use the CTECO Interactive Map Viewers at www.cteco.uconn.edu to more precisely search for and locate a site and to view aerial imagery with NDDB Areas.

QUESTIONS: Department of Energy and Environmental Protection (DEEP)
79 Elm St., Hartford CT 06106
Phone (860) 424-3011



Connecticut Department of
Energy & Environmental Protection
Bureau of Natural Resources
Wildlife Division

